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Public Comment Response Report

December 1993

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THE COMMONWEALTH OF MASSACHUSETTS

Low-Level Radioactive Waste Management Board

Department of Public Health

Department of Environmental Protection

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Public Comment Response Report

December 1993

THE COMMONWEALTH OF MASSACHUSETTS

Low-Level Radioactive Waste Management Board

Department of Public Health

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Introduction

This Public Comment Response Report summarizes the comments received on draft documents relating to the management of low-level radioactive waste (LLRW) in the Commonwealth of Massachusetts. The documents were issued January 21, 1993, by three state government agencies -- the Low-Level Radioactive Waste Management Board (a nine-member board appointed by the Governor), the Department of Public Health (DPH), and the Department of Environmental Protection (DEP) -- in accordance with Massachusetts General Laws Chapter 111H, the Massachusetts Low-Level Radioactive Waste Management Act (referenced throughout this report as "Chapter 111H").

In addition to summarizing the comments, this report includes brief responses from the three agencies, so that the reader can see how the agencies dealt with each comment raised by the public. Because each of the three agencies decided which comments to respond to, how to group the comments, and how to respond to the comments, the format and style of the sections of this report differ accordingly. Even in the overall summary that follows this introduction, the sections on the DPH and DEP regulations were written by the staffs of those departments.

Overview

State and federal laws require the Management Board to decide whether or not the Commonwealth should identify a Massachusetts site and build and operate a facility for the storage, treatment, or disposal of LLRW. Another option would be to enter into an agreement to have another state take Massachusetts waste, though efforts in this direction to date have not been fruitful. A third option would be for each business and institution generating LLRW to store its waste temporarily on its own premises, until a longer-range disposal solution is agreed upon. On February 16, 1994, at the end of a public hearing in Boston, the Board will choose one option or a combination of options. In accordance with state law, the Management Board cannot make such choices until the documents have been adopted.

The draft documents spell out how the management of LLRW can take place in the future. These documents, and the agencies responsible for them (shown in parentheses), are:

- The draft LLRW Management Plan and implementing regulations (Management Board). The draft Management Plan provides background information, details options for long-term LLRW management, and explains the need for dependable access to a disposal facility. Its recommendations include the minimization of LLRW and technical assistance to generators storing LLRW on their premises. In the event the Management Board votes to site a disposal facility in Massachusetts, the draft also recommends grants to communities that wish to evaluate the potential economic impacts of having such a facility in their towns, and a system of property value guarantees. Also recommended is the segregation by short and long radioactive half-life of LLRW placed in a disposal facility, in order to enhance the safety and efficiency of any retrieval which may be required later.

- Draft regulations establishing criteria for the selection of a company, to be chosen by the site community, that would operate a facility, should facility siting begin (Management Board).

- Draft regulations regarding the licensing, development, operation, closure, post-closure observation and maintenance, and institutional control of any storage, treatment, or disposal facility for LLRW, should the Management Board vote (after all the draft documents have been revised, finalized, and adopted) to site such a facility in Massachusetts (DPH).

- Draft regulations to encourage LLRW generators to use fewer radioactive materials and/or types that decay relatively soon, and to otherwise minimize the amount of LLRW they produce (DPH).

- Draft regulations that spell out methods for identifying potential sites, and ultimately a superior site, for an LLRW disposal, treatment, or storage facility, should the Management Board vote to begin the siting process (DEP).

- A statement on the public health, environmental, social, and economic impacts of LLRW management practices and regulations proposed by the Department of Public Health (DPH). This document does not require adoption.

Until the close of the comment period on July 15, 1993, the drafts underwent a thorough review by the citizens of the Commonwealth, as required by Chapter 111H. The drafts were mailed to public libraries, chief town and city officials, and other interested individuals and organizations. To receive comments on the documents, 17 taped and transcribed public meetings were held in the following cities and towns (1993 dates in parentheses): Boston (2/22), Plymouth (2/23), Worcester (2/25), Springfield (3/2), Greenfield (3/3), Pittsfield (3/4), Attleboro (3/9), Haverhill (3/10), West Springfield (3/16), Athol (5/12), North Adams (5/13), Palmer (5/18), Concord (5/26), Worcester (5/27), Lee (6/2), Harvard (6/10), and Brockton (6/16).

More comments were gleaned from flyers and other printed materials handed out by participants at the above meetings; from minutes of regular Management Board meetings, which included public comment periods; from notes taken by the Management Board's Public Participation Coordinator at six informal briefing sessions held in Taunton (1/25), Fitchburg (1/26), Worthington (2/2), Amherst (2/3), Sheffield (2/3), and Duxbury (2/10) (all dates are 1993); from letters; from a petition; and from telephone calls.

Because it comes from a variety of sources, LLRW takes many forms. For example, nuclear power plants dispose of contaminated tools, replaced piping, and sludges generated in the course of normal maintenance. Contaminated glassware and various liquid wastes are generated in the manufacture and use of radioactive tracers, needed for medical and biological research at Massachusetts universities, hospitals, and private laboratories. Other waste forms include latex gloves, disposable protective clothing, paper towels, and other items used to protect workers and clean up work areas at facilities where radioactive materials are used.

Some LLRW can be stored where it is generated, until it decays to natural background levels of radioactivity. However, the waste containing radioactivity concentrated enough and/or long-lasting enough to require long-term isolation is of special concern because it requires long-term management solutions. Currently, such waste is shipped to a disposal facility in Barnwell, South Carolina. But access to this facility is expected to be cut off in the near future.

More than 400 hospitals, universities, biotechnology firms, and other businesses are licensed to use radioactive materials in Massachusetts. In the most recent annual survey by the Management Board, 263 of these organizations said they generated LLRW in 1992. Of these waste generators, 106 indicated they had shipped at least a portion of their waste out of state during 1992. By volume, after compaction and other treatments, this shipped waste totaled 119,004 cubic feet. By radioactivity, the total came to 76,363 curies. Most of this waste will decay to background levels within 150 years. A small amount, however, will remain radioactive beyond this time.

Report Format

The Management Board sections of this Public Comment Response Report (comments and responses relating to VOLUMES I and II of the LLRW Management Plan and to the Operator Selection Regulations) have evolved from a series of discussion documents created by the Management Board's staff in order to facilitate the Board's deliberations of the public comments on the draft documents. These discussions began as preliminary discussions before the end of the public comment period on July 15, 1993. After that date, the Board spent the rest of the year going through every comment relating to the draft Management Plan, the draft Management Plan implementation regulations, and the draft Operator Selection Regulations, this time deciding how to respond to each comment for this report. Some comments prompted the Board to revise the draft documents. All decisions of the Board were made at public meetings, after further comments from the audience.

Comments on the Operator Selection Regulations have been grouped by the section title to which they were deemed most relevant. The grouping systems for comments on the DPH and DEP regulations are less formal. Comments that related to DPH or DEP regulations as well as to a Management Plan chapter are followed by "(DPH)" or "(DEP)" in the Management Plan sections of this report. The Management Board recommended some revisions to the DPH regulations; the majority were incorporated by DPH.

The DPH section deals with comments on two sets of draft regulations, Part M (Licensing and Operational Regulations for LLRW Facilities -- 105 CMR 120.800) and Part M1 (LLRW Minimization Regulations -- 105 CMR 120.890). The comments are listed under the following headings: "Management Board Comments on Definitions -- Part M" (comments from the Management Board to DPH regarding the Part M regulations, dealing chiefly with definitions); "Management Board Comments on Definitions -- Part M1" (same as the previous group, but regarding the Part M1 regulations); "Management Board Recommendations Based on Public Comments" (more comments from the Board to DPH); "General Public Comments" (pertaining to either Part M or Part M1 or both); "Specific Public Comments -- Part M" (specific comments on the Part M regulations, listed in the order that the issues they raise appear in these regulations); and "Specific Public Comments -- Part M1" (specific comments on the Part M1 regulations, listed in the order that the issues they raise appear in these regulations). There is no numbering system. In some of the Management Board comments and recommendations to DPH, the first-person "I" refers to Management Board Chairman Charles Killian, who wrote to DPH to express the Board's position.

In the DEP section (LLRW Facility Site Selection Criteria Regulations -- 310 CMR 41.00), the comments are grouped first by the three parts of the regulations (Part I - General, Part II - Site Suitability Criteria, and Part III - Application Guidelines and Procedures). In Parts I and III, the comments are simply numbered. Both Part I comments concern the "Definitions" section of that part. In Part II, after a section of general comments, self-explanatory site criteria subject headings divide the comments further, and the comments are numbered within each such division. Subject headings do not necessarily correspond to headings in the regulations themselves. For example, the issue of transportation is dealt with under "G. Transportation" in the regulations, but under "E. Transportation" in this report.

Following an overall summary, the comments and responses appear in smaller type, to save paper. There is no section in this report for comments on the Management Plan implementation regulations. There was only one comment on these regulations explicitly; this appears among the comments to Chapter 2 of VOLUME II of the Management Plan, as comment 2.4G. Other comments that could be taken as indirect references to the implementation regulations were included under the most relevant VOLUME II chapter heading. There were no comments on VOLUME III ("Surveying Radioactive Materials Users in the Commonwealth") or VOLUME IV ("Appendices") of the Management Plan, so there are no sections for these volumes in this report. For the Management Plan adopted by the Management Board, the relevant data from VOLUME III was incorporated into Chapter 4 of VOLUME II.

In most cases, the comments, which appear in this report in boldface type, have been condensed and paraphrased. In some cases, similar comments have been consolidated into a single paraphrased comment. In some sections this is indicated at the end of the comment. For example, "(+2)" after a comment indicates that two other commenters said virtually the same thing, for a total of three commenters. A response from the pertinent state agency appears in normal type after each comment. None of the draft documents commented upon are reproduced in this report; the methodical reader may want copies of them close at hand.

Comments on the Draft Management Plan have been grouped under the chapter titles (e.g., "*Chapter 2: The Regulatory Framework for Managing Low-Level Radioactive Waste*") to which they are most relevant, in the opinion of the Management Board's staff. At the beginning of the VOLUME I comments, there is a section for general comments on VOLUME I. Each comment has its own number-and-letter code, for reference and discussion purposes, e.g., "2.3A." The number refers to the title of the chapter section, and the letter of the alphabet identifies its position in the group. When there are more than 26 comments under a section title, the alphabet repeats -- an additional letter is added to the code, e.g., "2.3AA," "2.3BB," and so on. In some sections, this system repeats to as many as six letters, e.g., "2.3AAAAAA." Often, a brief background statement summarizes the content of the chapter or section being commented upon.

The majority of the comments relate to VOLUME II of the draft Management Plan, the longest of the draft documents. To understand this section of the report, it is important to understand the system of subheadings which divides groups of comments under each bold italic chapter title. A bold subheading in smaller type that begins with a number is the title of a section within a chapter of the Management Plan, e.g. "**2.2 The Federal Role In LLRW Management**." Although the Board received comments on every chapter, there were no comments on certain chapter sections. Chapter sections for which no comments were received are not listed in this report. For example, there is no "**2.1 Introduction**," the first section of Chapter 2, because no comments pertaining to that section were received.

In some cases, the comments have been grouped again, just for this report, within a chapter section, by subtopic. When this occurs, the subtopics are listed in a note above the first comment but under the bold section title. The subtopic subheadings, set in normal type and underlined, are preceded by numerals in parentheses. To distinguish them still further, in an attempt to prevent the reader from confusing them with section titles or other headings, they are presented in what newspaper editors call "down style" -- only the first letter of the first word is capitalized, e.g., (1) Federal role: general.

Acronyms and abbreviations are used throughout the report. In most cases, the first appearance of the name of an agency or other abbreviated phrase is spelled out, with the acronym or abbreviation shown at the end in parentheses, as in the first paragraph of this introduction. The Management Board is often referred to throughout the report as the "Board." Massachusetts is often referred to by its U.S. Postal Service Zip Code abbreviation, "MA."

The Board asks the reader's forgiveness for places in this report where an LLRW facility or process is referred to in the future tense, as if a decision had already been made to site a facility in Massachusetts. The context of this whole report, even when the words "if the Board votes to site" are missing from a pertinent sentence, is that no such decision had been made when this report was published. No such decision can be made until February, 1994.

At the end of this report is a list of commenters. Signers of a petition are listed separately. If a commenter's name is missing or misspelled, the most likely reason is that their spoken and/or handwritten name could not be fully understood by the transcriber/typist. Commenters employed by or speaking on behalf of a business or organization are listed by their names only. When a commenter signed in at a hearing without including a hometown, he or she is listed under the town where the hearing was held.

Documents, in draft or adopted form, may be obtained free of charge from the office of the issuing agency, at one of the following addresses:

- Massachusetts Low-Level Radioactive Waste Management Board
  100 Cambridge Street, Room 903
  Boston, MA 02202.

- Massachusetts Department of Public Health
  Radiation Control Program
  305 South Street
  Jamaica Plain, MA 02130

- Massachusetts Department of Environmental Protection
  One Winter Street
  Boston, MA 02202

Overall Summary

With so many people commenting on the draft documents, there were naturally many viewpoints on each topic concerning the management of low-level radioactive waste (LLRW) in Massachusetts. The reader can see this because the comments have been paraphrased and reproduced later in this report, along with specific responses from the pertinent state government agency.

The comments served the purpose of exposing the Low-Level Radioactive Waste Management Board and the state Departments of Public Health (DPH) and Environmental Protection (DEP) to public opinion. Some comments stimulated revisions to the draft documents, and the responses to these comments note that the revisions will be made. The Board and the departments frequently used their responses to explain their policies, as well.

Style, Terms, Updates

There were questions of style that apply throughout all the documents, and even to future publications. Several commenters made the point that the use of "LLW" as an acronym for low-level radioactive waste was misleading because it dropped reference to the most important word -- "radioactive." Likewise, some commenters said the use of the word "activity" instead of "radioactivity," while common in scientific circles, may not be advisable in documents written for the public. Early in its six-month series of final discussions on the public comments, the Management Board agreed with these points, instructing its staff to change "LLW" to "LLRW" and to use "radioactivity" throughout the Management Plan and in all future Board documents, except when specifically refering to rate of decay.

Some commenters protested the use of the word "disposal," contending that because of some long-lived radionuclides present in LLRW, the isolation of this material should more accurately be called long-term storage. The Board agreed, and revised the Management Plan to emphasize that in Massachusetts, LLRW "disposal" is most nearly like long-term, monitorable (and retrievable, if necessary) "storage." Under Chapter 111H, the Commonwealth is not permitted to "walk away from" an LLRW facility. However, the Board indicated that it would continue to use the "disposal-is-similar-to-long-term-storage" reference, because members felt that 1)the definition in the Management Plan ("the isolation of low-level radioactive waste from the biosphere inhabited by human beings and their food chains") adequately describes such a "long-term-storage/disposal" facility, and 2)to switch to another term could jeopardize the required consistency, on certain points, between the wording of federal and state regulations.

Other commenters pointed out that the statistics in some of the Management Plan's tables and text had changed since the draft document was issued on January 21, 1993. These statistics were updated for the version adopted by the Board.

Some Issues – Management Plan

There were many general issues raised by those commenting on the Draft Management Plan. For instance, some questioned the need for most or all uses of radioactive materials, proposing that these uses be phased out. Others spoke in favor of such uses. Still others felt there should be more regulatory pressure on radioactive materials users to find non-radioactive alternatives. The Board is on record as favoring measures that reduce the amount and radioactivity of LLRW, including the reduction or elimination of radioactive source material at the head end of processes that generate LLRW. Public comments led the Board to recommend more emphasis on this policy in the DPH minimization regulations. At the same time, the Board feels that society at large approves of most uses of radioactive materials, and that radiation, like fire, is a natural phenomenon to be used under controlled conditions. Additionally, the Board is reluctant to take positions beyond its statutory mission, which limits it to the management of the waste produced as a by-product of radioactive materials use.

One family of comments concerned the possibility that the Board will vote to site an LLRW disposal, storage, or treatment facility somewhere in Massachusetts. Some commenters favored such a vote. However, many were opposed to such siting, especially in their region, and favored an out-of-state solution instead. The Board, which is on record as favoring an out-of-state solution, has for years been in touch with the officials of other states and compacts, and will continue seeking an arrangement whereby Massachusetts LLRW generators could ship their waste to a facility in another state after the expected cutoff of access to the Barnwell, South Carolina, facility which generators now use. Thus far, the states and regional compacts have shown little interest in taking Massachusetts LLRW.

A significant number of comments were based on a concern that radiation is harmful to human health, and that too much radiation would be released from a centralized Massachusetts LLRW facility. In response to some commenters, the Board sponsored a panel discussion on low-dose radiation exposure in Worcester November 3, 1993. The Board is aware of the potential hazards of radiation, and aware as well that scientists still disagree over the health effects of doses as low as the ones allowed from an LLRW waste facility. However, the Board has seen no evidence to convince it that such low doses pose an undue risk to the citizens of the Commonwealth. Even more germane are the protective measures required by Chapter 111H that would make the release of radiation or radionuclides less likely than under federal regulations. For instance, in Massachusetts shallow land burial of LLRW is prohibited. The engineered facility that would be built, if one is ever built, would provide more barriers between the waste and the soil. The facility must be designed to allow monitoring and retrieval of the waste. Furthermore, any in-state LLRW facility must, under DPH regulations, be designed and built with the goal of zero radiation release.

This issue goes to the core of the Management Board's political dilemma: LLRW is potentially hazardous if it is improperly managed; the waste has to go somewhere; long-lived LLRW is most easily managed in a centralized facility; there is more public opposition to a centralized facility.

Many commenters felt strongly that the generators of LLRW should foot the bill for its disposal, including the costs of selecting and evaluating potential sites. At first, this was not the policy of the Management Board nor the Governor; a $45 million bond, if approved by the Legislature, would have covered these expenses, and/or the buy-in costs of a deal with another state. However, after citizens spoke up at a June hearing before the Joint Committee on Natural Resources and Agriculture, the bond bill was amended. At this writing, the bill before the Legislature would require LLRW generators to reimburse the Commonwealth for some expenditures from the bond funds.

Another prominent concern at the public hearings was a conflict-of-interest issue. Three members of the Management Board, and one designee of a cabinet secretary who serves on the Board, are (or were) employed by LLRW generators. State law requires that the Board comprise members who are knowledgeable in several fields, including radiological health and engineering. Some commenters wanted to see no one on the Board whom they felt would be swayed by his or her business affiliations. The Board responded that in its opinion, and within the State Ethics Law framework with which each member must comply, individual Board members can separate their decisions on the Board, which are made to represent the "public interest," from their professional affiliations, personal opinions, etc.

There were several comments that the federal system for defining and classifying LLRW should be changed, and that the Board should lobby the federal government toward this end. A related group of comments urged the Board to lobby Congress to amend the federal law that assigns the states responsibility for LLRW, possibly in favor of a new national disposal site in a desert region. In essence, the Board felt that both of these causes have merit, but both are political long-shots. Some Board members felt that involvement in such issues would transcend the scope of the Board's duties and perhaps cost the Board some credibility with Congress and other states. The classification issue is mitigated by provisions that give the Board, in the event a facility is built and begins receiving LLRW, the authority to set specific restrictions annually on what wastes can and cannot enter a Massachusetts facility. Also, the Board agrees with comments that long-lived LLRW should be separated from short-lived LLRW, to allow easier removal of any remaining long-lived LLRW at the end of the facility's institutional control period; these provisions were included in the draft documents.

There were many comments that pertained to specific sections of the draft Management Plan or draft regulations. Still, the purpose of this summary is only to identify some general issues raised. One trend in the comments was the call for an extension of the public comment period, to provide more time for citizens to read the documents and more time for the Board to publicize them. Some commenters called for a second round of public meetings at various locations around the state, to extend the discussion of the drafts. In response to these comments, the Board extended the comment period two and a half months, from April 30 to July 15, 1993, and conducted eight additional public meetings.

There was concern that state law gives the Management Board authority to sidestep the facility site selection and operator selection processes, including public participation opportunities, if it votes to site a centralized interim or emergency storage facility, which could hold LLRW for perhaps five to ten years. In responding to these comments, the Board acknowledged the fact that too little detail about such an Interim and Emergency Siting Plan was contained in the Draft Management Plan. The Board promised to elaborate on it more in the revised Management Plan. However, the Board added that to pursue such an interim or emergency storage facility, it would first need to include more about the plans for development of such a facility in the Board's Interim and Emergency Storage Plan, as well as in the Management Plan. No such provision is included in the Board's emergency plans at this time.

Displeasure was voiced by commenters who would like local communities to have the power to prohibit or veto an LLRW facility. There is no such power or veto under Massachusetts law because the Legislature sees the LLRW Issue as a statewide issue to be resolved by the state as a whole, a policy with which the Board concurs.

The Board debated at length about comments calling for changes in the definitions of "neighboring community" and "affected community." Commenters wanted the towns surrounding a site community to have more say in the siting and operator selection processes and/or a greater share of the monetary benefits. To change the definitions would take an amendment to Chapter 111H. Feeling that surrounding communities should be encouraged to participate informally, but reluctant to dilute the influence or benefits of the "site" or "neighboring" communities, the Board decided that the system already on the books was preferable.

There were various comments about siting an LLRW facility. Two common concerns were a perceived bias toward rural or uncontaminated areas and the possibility that the Board may tilt its preference toward a volunteer community rather than strictly following the DEP siting criteria. The Board explained that U.S. Nuclear Regulatory Commission (NRC) regulations call for a site with relatively low population density, but pointed out that this could conceivably include parts of some suburban communities as well as rural towns. One advantage of an uncontaminated site that is well away from radioactive materials users or remediation sites Is that leaks or accidental releases could be detected and monitored more easily; there would be no question where they were coming from. Federal and state regulations require that any potential site be capable of being characterized, modeled, and monitored. The Board would have to determine whether or not conditions at a particular site would preclude such evaluation because of the site's proximity to some other facility or contaminated area. As for preferring volunteer communities, the Board remained committed to its policy of considering only sites that meet the DEP's site suitability criteria. Other factors would be secondary.

Some commenters said failure to come up with a long-term disposal plan for Massachusetts LLRW would cause some companies that generate LLRW (such as biotechnology firms) to leave the state, taking jobs and money with them. Others contended these researchers and companies would stay, to be close to the resources of the Boston area university system. In its responses, the Board speculated that some businesses and life-science researchers may move to other states if the lack of an available disposal site caused their employers to discontinue the use of long-lived radioactive tracers.

The possibility of on-site storage on the premises of more than 100 Massachusetts LLRW generators came up in various comments as a reason to put off the siting of a disposal facility. Acknowledging that the NRC will allow at least five years of on-site storage, the Board pointed out that the siting, licensing, and development of a disposal facility could take five years, particularly if litigation were involved. The Board's decision regarding in-state facility siting, which will be made in February, 1994, will include a consideration of such factors as the time involved in implementing a long-range policy. In any case, because of federal guidelines against using storage as de facto disposal, the Board sees on-site storage as only a short-term solution.

Concern was raised that Massachusetts taxpayers might have to pay for cleaning up after an accident at an LLRW facility. The Board explained that Massachusetts law makes LLRW generators strictly, jointly, and severally liable for any harm to persons or property, for as long as the waste is in the facility. The provision of an LLRW trust fund to ensure the availability of funds for contingent liability and maintenance and remediation during the institutional control period (after the facility is closed) -- funded by the generators through surcharges -- is Intended to prevent the need for any such funding from taxpayers. The Commonwealth would serve as the mitigator of last resort, only if all insurance coverage, trust funds, and federal funds were exhausted. This provision was included in Chapter 111H to guarantee that the state would never "walk away from" the responsibility of protecting public health and the environment.

DPH Regulations

Staff of the Radiation Control Program at the Department of Public Health reviewed all of the comments received pertaining to the draft regulations Part M (Licensing) and Part M1 (Source and Volume Minimization). Comments were received either directly in writing to the Department; in writing as part of a larger piece of testimony to the Management Board; or as verbal comments made during any of the above-mentioned public hearings or briefing sessions. Staff reviewed the transcripts of these hearings and briefing sessions, in case there were additional comments that the staff felt applied to the Department. The Department addressed all of the comments expressed during the public hearings and briefing sessions which were identified by the Management Board as comments pertaining to the Department.

One of the major themes of comments on the draft regulations was a request for a requirement for baseline health studies in the sited community and follow-up health studies every five years. This requirement was added to the regulations. Another major comment that was repeated a number of times was the presumption that the regulations would apply to all licensees who use radioactive materials, whereas the Part M regulations apply only to low-level radioactive waste facilities as defined by Chapter 111H. A third comment from a number of individuals was that the Part M1 regulations should contain more specificity and quantitative goals. The Department's response to this is that the current regulations were designed for users to strive for the highest amount of minimization achievable, and setting specific numbers might set an artificial restriction on users striving toward those goals.

Another major comment was the suggestion that there should be more detail in the Part M1 regulations, and the Department's response was to Include the appropriate detail in the Guidance Document. A fifth major comment from numerous commenters requested that there should be more emphasis in the Part M1 regulations on source reduction and elimination, and the regulations have been changed in response to this comment. Another comment worthy of special mention dealt with the suggestion for Including a discussion of which radionuclides may be stored for decay under federal and state regulations. The response of the Department to this comment was that all generators should store for decay to the maximum extent possible. However, a specific time period for the appropriate half-lives allowed should not be included in the regulations, since experience has shown that the federal government, on a case-by-case basis, has been willing in recent years to extend this time period, thus allowing storage for decay for waste containing radionuclides with half-lives long enough to have previously excluded them from such storage. A discussion of storing for decay to the maximum extent possible is included in the Guidance Document.

DEP Regulations

The Department of Environmental Protection received a substantial number of comments on the draft siting criteria regulations, both in writing and through testimony at public hearings. As a result, a significant number of revisions and corrections were made which are intended to expand protection for the public health, safety, and the environment and improve the overall effectiveness of the regulations. A summary of the major revisions is set out below; the Department took the following actions:

1. Eliminated the conditional consideration criteria which permitted siting of a facility in the Zone II (recharge area) of a small water system on condition of establishing an alternative system. No siting will be allowed in any Zone IIs.

2. Added non-community drinking-water wells to the water sources protected from siting within their Zone of Contribution. Non-community wells are water sources serving a smaller population than public water systems, and are protected to the same extent as private wells.

3. Provided additional protection from radiation exposure to sensitive populations by incorporating both the conditional setback distance and lower exposure standards presented as alternatives in the public hearing draft.

4. Eliminated the preference criteria regarding cost of the site and potential socio-economic impacts from siting.

5. Clarified the criteria governing state and federal protected lands, to ensure that sites will not be located in those areas except as allowed under the respective provisions of each conservation statute and regulation. Expanded protection of state conservation lands by requiring the Board to demonstrate that siting near a protected land would not likely cause an adverse impact.

6. Clarified the Board's authority in applying the siting criteria and conducting the site characterization process. The Board is now clearly required to comply with the sections of the regulations defining application of the criteria, establishing requirements for a technically superior site, and providing general guidance for conducting site characterization quality assurance procedures. The regulations now allow the Board to supplement the preference criteria for selecting among technically superior sites, but if the Board chooses to use a system to compare among preference criteria it must adopt the system in a public process before the draft candidate site report is issued.

Conclusion

Perhaps the greatest benefit of the whole public comment process is that people got involved. From Sheffield to Haverhill, from Plymouth to North Adams, Massachusetts citizens took the trouble to educate themselves about what their government was planning. If the Management Board does vote to begin the siting process, after the Management Plan and regulations are in place, there will be many more stages at which citizens can participate. These stages are outlined in Chapter 111H.

People who make the effort to learn about and participate in the affairs of their government are needed to counterbalance other interests, to suggest better ideas, and to point out laziness and incompetence. The extra time required for public participation is worth the extra input that will improve a project's eventual outcome. As frustrating as the process can be at times, perhaps the one thing every commenter can agree on is that government works best when it is being watched.

The Massachusetts Low-Level Radioactive Waste Management Board

Trudy Coxe
Secretary, Executive Office of Environmental Affairs

Charles D. Baker
Secretary, Executive Office of Health and Human Services

Charles B. Killian
Chairman

Timothy W. Brennan

Barry Connell

Michael Crossen

John A. Mayer, Jr.

Dr. Joseph Ring

Judith A. Shope

VOLUME I, LLRW MANAGEMENT PLAN

Background:

VOLUME I of the Low-Level Radioactive Waste Management Plan is similar to an "executive summary" of the whole Management Plan. While VOLUME II provides background information and the rationale for various recommendations made by the Low-Level Radioactive Waste Management Board, VOLUME I summarizes these recommendations and the major issues which led to them. In particular, VOLUME I describes the factors affecting LLRW management decision-making, and presents a "strategic options" plan containing three main options for LLRW management, namely (1)continuing efforts to identify an out-of-state disposal arrangement; (2)providing for the "interim" storage of LLRW; or (3)initiating the siting of an LLRW disposal facility within the Commonwealth.

Public Comments:

[NOTE: Except for a section of general comments at the beginning of this section, comments on VOLUME I are organized by VOLUME I chapter headings, which do not correspond to VOLUME II chapter headings.]

General Vol. I Comments:

A1: VOLUME I is too generalized.
Response: VOLUME I is intended as an Executive Summary with four major components. It (1) summarizes the many issues affecting low-level radioactive waste (LLRW) management that are detailed in VOLUME II; (2) it enumerates the determination of need for storage, treatment, or disposal facilities detailed in Chapter 15 of VOLUME II; (3) it identifies three "performance plans" of action based on the three chief LLRW management options available to the Management Board; and (4) it summarizes 25 Management Board recommendations made within the Plan. As VOLUME I is being revised, the Board will endeavor to insert more details and avoid generalization.

A2: VOLUME I emphasizes the health field too much.
Response: The Management Board recognizes that the medical products, health care services, and medical research associated with numerous commercial, academic, and health care categories of radioactive materials licensees who generate LLRW are vital to quality health care and are an important element in the equation for jobs and economic viability in Commonwealth.

A3: VOLUME I portrays radioactive materials as more beneficial to society than they really are.
Response: The Management Board believes that the benefits and hazards of using radioactive materials are appropriately described in VOLUME I.

A4: It's a serious shortcoming that waste minimization is only mentioned in one of the 25 recommendations.
Response: The Management Board recognizes that LLRW minimization is of chief significance, and has stressed this fact in several sections of the Management Plan. The Board believes other policies are of equal importance, including the reduction of radioactive sources that result in LLRW, the involvement of the public in true participation, the development of a "total hazard" classification system to manage LLRW for storage, treatment, or disposal, and the other issues surrounding management of LLRW that remains radioactive after effective minimization strategies are implemented.

A5: Because the Management Board could choose more than one management option, and implement them concurrently (e.g., out-of-state performance plan and in-state disposal facility siting), the language throughout the plan should reflect these strategic requirements and options.
Response: Pages 4-1 and 4-15 are among the pages that refer to the possible choice, by the Management Board, of more than one implementation strategy. The revision of VOLUME I will endeavor to include additional references to a multiple-option decision by the Board.

Vol. I Chapter 1: The State's Responsibility to Manage LLRW

1A: Update to reflect the current operational status of the three LLRW disposal sites at Beatty, Hanford, and Barnwell.
Response: Such a revision will be made. In addition, a reference to the role of the Envirocare disposal site in Clive, Utah, will be inserted. Information pertaining to LLRW is constantly changing, and the entire system for managing it is dynamic, and in constant flux.

Vol. I Chapter 2: Factors Influencing LLRW Decision-making

2A: Page 2-1 (paragraph 2) should be updated to reflect the Board's decision to lengthen the public comment period and to hold more public hearings; change the timetable.
Response: Such revisions will be made to this paragraph.

2B: **Page 2-1 (paragraph 3): The two-year process to identify candidate sites and a final "superior" site is overly optimistic.**
Response: The paragraph refers to the time necessary to "identify" "candidate" and "superior" sites. It does not mean to imply that a facility would be in operation after two years. Other activities, such as licensing and construction, would also need time to occur, although some licensing requirements would overlap with those of site selection.

2C: **Page 2-2 (bullet entitled "Federal mandates assigning LLRW disposal responsibility to each state."): This is the second place in this document so far that mentions that a state's responsibility to provide for disposal capacity begins Jan. 1, 1993, under the federal acts referenced. There is some question as to whether this is accurate after the U.S. Supreme Court in 1992 removed the "take title" provision of the Amendments Act of 1985. It would be helpful if the Board would make public the legal analysis that opined that Jan. 1, 1993, is the official start date of the Commonwealth's responsibility under the LLRW Policy Amendments Act.**
Response: A legal analysis is not necessary to conclude that the U.S. Supreme Court's decision in New York v. United States invalidated the "take title" provision contained in section 5 of the federal Low-Level Radioactive Waste Policy Amendments Act (LLRWPAA), but left the remainder of the Act intact. Section 3 of the Amendments Act begins: "Each State shall be responsible for providing, either by itself or in cooperation with other States, for the disposal of [LLRW]...." Additionally, Section 5(d)(2)(C) of the Act continues to impose a sanction on a state that is "unable to provide for the disposal of all [LLRW] generated within such State" by January 1, 1993. That sanction is the loss of the surcharge rebate funds to which the state would otherwise be entitled under section 5(d)(2)(B)(iv).

2D: **Page 2-2 (bullet entitled "Federal law provisions that regional groupings, or "compacts," of states may exclude waste importation, but single states may not."): Statements are made that compacts may exclude out-of-compact waste from compact disposal facilities, while "go-it-alone" states may not be able to do so. There is legal opinion that if a go-it-alone" state actually owned and operated the disposal facility, it may be able to exclude out-of-state waste. This statement is inconsistent with other statements made within the Plan that a "go-it-alone" state cannot exclude out-of-state LLRW from its facility. If the purpose of the inconsistent statement is to present a contrary legal opinion, the legal analysis should be included in the discussion.**
Response: The issue of whether, and under what circumstances, a "go-it-alone" state may exclude waste generated outside its borders from an LLRW facility has been debated long and hard. In general, the Commerce Clause of the U.S. Constitution prohibits states from adopting regulations that prohibit the importation of waste from other states, in the absence of an express statutory authorization. With the exception of the Northeast Compact (Connecticut and New Jersey), the regional compacts approved by Congress each contain prohibitions against the importation of waste from outside the applicable compact region, and these prohibitions were approved by Congress when it gave its consent to the compacts.

However, although the general rule prohibits regulatory bans on waste importation, there may be limited exceptions. If a state acts as the proprietor of a commercial facility, it may have somewhat more leeway in restricting access to its facility than it would enjoy if it were merely exercising regulatory supervision of it. However, the full extent of a state's ability to limit facility access has never been litigated.

In light of these facts, the Management Board has taken the position of "assuming the worst, but hoping for the best." Thus, when it considers the possibility of access by Massachusetts generators to out-of-state facilities, the Board recognizes that it might well be a difficult battle to obtain access, and thus assumes that access will not be available. Nevertheless, when it considers restricting access to a potential facility in the Commonwealth, the Board is aware that, despite its best efforts, it may fail to exclude out-of-state waste unless it has entered into a compact approved by Congress.

2E: **Page 2-3 (bullet entitled "The state process directing policy-making on LLRW management."): Statements should be added that mention that most states' siting processes have been delayed, in addition to the reasons mentioned, by political expediencies and by legal challenges of individuals and organizations whose interest is in ensuring that an LLRW disposal facility is never sited anywhere.**
Response: The paragraph will be revised as follows: "Some states' LLRW management actions have hastened these activities; some have suffered from their lack of public process and planning. In addition, some states have faced legal and political hurdles aimed at stopping certain LLRW disposal facilities."

2F: **Page 2-4 (bullet re: Agreement State status): Statement should be updated to reflect the opposition of the Governor's Advisory Council on Radiation Protection to the Commonwealth becoming an Agreement State.**
Response: The paragraph will be revised to include a more current date when Massachusetts is expected to receive Agreement State status. It will not, however, make any reference to the Governor's Advisory Council on Radiation Protection, which supports the state's application to join the Agreement State program.

Vol. I Chapter 3: Finding of Need for Disposal Facility

3A: **Page 3-2 (last paragraph) states that MA LLRW generators will have no disposal site available to them after June 30, 1994, if South Carolina decides not to extend the availability of Barnwell to out-of-compact waste. This may be true if Beatty or Hanford continue on their current course. However, it is hoped that MA will work with other states, compacts, and the federal government to make these sites available. There is enough capacity at Hanford for the entire U.S. production of LLRW for 50 years.**
Response: For several years, Massachusetts officials worked with other states and compacts to try to convince officials in Nevada and Washington that leaving their LLRW disposal sites open to other states and compact regions would be better

for the country and financially beneficial for the two sited states. Unfortunately, political decisions were made that closed the Beatty site to all generators, and closed the Hanford site to generators outside the Northwest and Rocky Mountain Compact regions. Whether or not those political judgments will change in the future is hard to predict. However, the Management Board continues to express its desire to obtain access to the Hanford site.

3B: **Page 3-2 (last paragraph): It is hoped that efforts to join a compact or gain access to existing or new sites will be accomplished before 6/30/94.**
Response: The Management Board would like to arrange long-term access to an existing or new LLRW disposal facility as quickly as possible. While state officials continue talks with other states and compact regions, there has not been any change in their current policy against accepting out-of-state or out-of-region LLRW into their existing or developing disposal facilities.

3C: **Page 3-3 through 3-6: Discussion of composition of compacts and Table 3-1 should be updated. (+1)**
Response: It is the Management Board's intention to revise all tables and other materials in the Management Plan, as appropriate.

3D: **Page 3-3: The sentence "While Texas law would not exclude the potential of some Massachusetts waste going to that state's disposal facility, Texas is actively discussing a relationship with the small-volume-generating states of Vermont and Maine, whose waste totals the percentage limit in Texas." is confusing and should be reworded.**
Response: This passage will be reworded, and will also be updated to describe the new Texas-Maine-Vermont regional compact agreement.

Vol. I Chapter 4: Strategic Options Plan and Recommendations for LLRW Management

4.1 Action Plan Introduction

4.1A: **Page 4-1: This entire section needs to be updated to reflect the fact that the Board will not make a decision on LLRW management options until the spring of 1994. In addition, the Plan should make it clear that the Board will adopt elements of the options and mold them into a strategic implementation plan and process.**
Response: The Board's schedule for deciding whether to initiate in-state facility siting is February, 1994, not the spring of that year.

4.2 Out-of-state Performance Plan

4.2A: **The Board is encouraged to adopt the recommendations that would require it to take the steps outlined in this section. These action steps are necessary in order for the Commonwealth to enter into a disposal agreement.**
Response: Opinion noted. The Commonwealth could also enter into a disposal agreement under the Disposal Facility Performance Plan, in which the state would site a disposal facility, and allow other states to join in a compact or contract with Massachusetts.

4.3 Interim Storage Performance Plan

4.3A **A discussion of the inapplicability of M.G.L. Chapter 503 to the siting of an interim centralized storage facility would be helpful. There is some concern that any effort to arrange for an interim centralized storage site would be challenged under Chapter 503, which might require a statewide referendum on the siting of such a facility.**
Response: Chapter 503, a 1982 referendum law, requires an affirmative certification by the Legislature, as well as statewide voter approval, for any storage, incineration, or disposal facility sited in Massachusetts which is not solely for the storage, incineration, or disposal of LLRW produced from medical or bio-research applications. Chapter 503 has never been utilized, but an opinion issued by the Massachusetts Supreme Judicial Court in June, 1986, indicated that the legislative certification and voter approval provisions of this Act pertaining to the siting of an LLRW facility could not be constitutionally incorporated into the regulatory structure established by Chapter 111H. However, a formal legal challenge has not been mounted, and Chapter 503 is still the law of the Commonwealth.

4.3B: **Board needs to develop explicit conditions to trigger emergency and interim storage.**
Response: Chapter 111H requires the Management Plan to include "interim and emergency storage plans" that would take effect "whenever it appears that no facility is or will be available to accept LLRW generated within the Commonwealth." Such plans could include contractual agreements with out-of-state storage facilities, the use of on-site storage at all licensee locations in the state where LLRW is generated, or the establishment of a centralized, interim and emergency storage facility.

VOLUME I of the Management Plan presents an "Interim Storage Performance Plan" as one of the options for consideration by the Board to address short- and long-range LLRW management needs. However, the corresponding narrative chapter on storage capacity in VOLUME II (i.e., Chapter 12) does not evaluate the components of an interim or emergency storage plan in a correlative manner. Chapter 12 analyzes various storage options that could be part of an interim and emergency storage plan, but does not identify them as such. The Management Plan will be revised accordingly.

4.3C: **The siting plan of an interim storage or emergency storage facility is unacceptable; specific criteria must be cited in the regulations; more than an environmental monitoring program is required.**
Response: Chapter 111H stipulates that the Management Board may develop and implement interim or emergency storage plans based on one explicit criterion, as expressed in the statute: "whenever it appears that no facility is or will be available to accept LLRW generated within the Commonwealth." Chapter 111H also provides that interim or emergency storage plans may include contractual arrangements for out-of-state storage, on-site storage, the development of a centralized interim storage facility within the Commonwealth, or a combination of these options.

If the Board determines that a need exists for a centralized interim storage facility, the law gives the Board or its designee the authority to apply for an interim or emergency storage facility license without being designated as an "operator" pursuant to section 16 of Chapter 111H, without having to issue an RFP for the development, operation, closure and post-closure observation and maintenance of a facility, pursuant to section 22 of Chapter 111H, and without having to be selected as operator by a Community Supervisory Committee. It also authorizes the Board to construct and operate the interim and emergency storage facility.

Chapter 111H does stipulate, however, that no such interim or emergency storage facility may be constructed unless the Massachusetts Department of Public Health has conducted an environmental monitoring program at the storage site, and has yielded representative baseline data about the site, to determine compliance with applicable regulations, and with conditions of the facility license; to provide an early warning of the extent of any radionuclide migration from the storage facility; and to provide reliable environmental data throughout all phases of the storage facility siting process.

DPH's proposed "Part M" regulations require an interim storage facility to be licensed using the same criteria as a long-term facility. The principal differences in the siting of an interim, rather than a permanent, storage facility are that the Board could select a site without going through the statewide site selection process and could select the facility operator rather than deferring to the site community's choice. An interim storage facility would still have to meet the same regulatory standards as a long-term facility, however.

In response to the commenter, the requirements for developing a centralized interim and emergency storage facility are not elaborated as fully as possible in the Board's regulations to implement the Management Plan. The Board will revise the Plan accordingly. In addition, as noted in the response to comment 4.3B, references to the interim and emergency storage plan will be included in the revision of Chapter 12.

4.3D: **(Step 3): The contingency plan to ensure a coordinated state agency response to handle LLRW generators' loss of access to disposal should be reproduced some place in the Management Plan.**
Response: The Management Plan recommends periodic updates of the Board's contingency plan, which was developed to suggest actions by various state agencies in case of unscheduled, unanticipated termination of access to disposal facilities. The Board will summarize this plan in the Management Plan.

4.4 Disposal Facility Siting Performance Plan

4.4A: **There should be a specific timetable in the Management Plan, showing when a new facility could be on line.**
Response: Agreed. Such a timetable will be included in the revision of VOLUME I.

4.4B: **Chapter 503 referendum should be a regular step in Section 4.4.**
Response: Page 4-6 of VOLUME I describes the decision points of the "Disposal Facility Siting Performance Plan" as those steps which are required by Chapter 111H. They do not include all other provisions of state and federal law that may also relate to disposal facility siting activities, which are not specified in Chapter 111H. All requirements of all laws would be included in the Management Board's "Siting Plan," which will be prepared if the Board votes to initiate siting.

4.4C: **Page 4-7 (Step 2, second paragraph): Consider using "eliminate areas that have a low probability of containing superior sites" instead of "eliminate unsuitable areas."**
Response: The suggested wording will be substituted.

4.4D: **Page 4-7 (Step 3): As part of the "volunteer" program, funding should be available for discussion of not just the economic impacts of a facility, but other impacts as well.**
Response: The Management Board's grant program would enable municipalities possibly interested in volunteering a site to receive grants to evaluate the potential economic impacts of having an LLRW disposal facility within their borders. This program would be available to communities at the outset of any facility siting initiated by the Board.

In addition, Chapter 111H identifies other periods later in the siting process that involve reviews of various potential impacts from facility siting. The first of these are two environmental evaluations conducted during the site screening process by the MEPA (Massachusetts Environmental Policy Act) Unit of the office of the Secretary of Environmental Affairs. These evaluations are intended to assess the Board's facility siting endeavors for technical adequacy and conformance with DEP site criteria regulations. The MEPA evaluations would be conducted at two separate stages during siting: after the Board's issuance of a Draft Candidate Site Identification Report, and following the Board's issuance of the Draft Detailed Site Characterization Report.

Another impact review is the one conducted by a Community Supervisory Committee (CSC) of a candidate site community. CSCs receive funds from the Management Board to assist the Board in developing detailed site characterization plans for each candidate site; the local committee may use its resources to retain consultants to evaluate all potential impacts of an LLRW facility in connection with its review of the detailed site characterization activities.

In addition, if a superior site were selected, the facility operator would be required to submit an Environmental Impact Report (EIR) regarding the application for a facility license, and relating to the proposed development, operation, closure, post-closure, and institutional control of a facility. A citizens advisory committee comprised of the Community Supervisory Committee and other site community citizens would assist in establishing specific issues and procedures for evaluating and reviewing the environmental impacts of the project.

4.4E: **Page 4-7 (Step 3): Under bullet "Grants to Evaluate Siting Effects," it is unclear why, if a community volunteers a site, there is a need to continue to evaluate the entire state in order to identify the most suitable "candidate" sites for further analysis. This is an example of the duplicative and wasteful process required by Chapter 111H. The volunteered site (or sites) should be characterized to ensure that the site would be suitable from a public health, safety, and environmental perspective. This characterization should include an analysis of the type of engineered disposal facility features that would be required to ensure compliance with the licensing criteria. It would be a waste of money and resources to identify additional candidate sites if the volunteered site is in a suitable area as identified by the Statewide Mapping and Screening Report.**
Response: The need to screen the entire state for potential candidate sites is a requirement of Chapter 111H, section 20. Step #3 relates to notifying all cities and towns that grants would be available to those municipalities who may be interested in possibly volunteering a site, after issuance of the Statewide Mapping and Screening Report. The last sentence in Step 3 is confusing, in that it refers to the initial notice to municipalities that the siting process has been initiated, rather than implying that an additional statewide screening would be repeated after volunteer sites are submitted to the Board. The language will be revised for clarity.

4.4F: **Page 4-7 (Step 4): The facility size options listed should be revisited. The study that generated these options is dated 1988. For example, current projections of LLRW volumes in MA are estimated at 30,000 cubic feet per year, which will dramatically affect the economic viability of a MA-only disposal facility. Changes to other assumptions should be examined as well.**
Response: The 50,000-cubic-feet-per-year figure represents an annual average that includes a total of 450,000 cubic feet of decommissioning waste over the life of the facility (15,000 cubic feet per year when averaged). Thus, this facility capacity estimate is based on an average of 35,000 cubic feet per year of typical LLRW, not including decommissioning waste. These figures appeared to be reasonable based on information available to the Board at the time the analysis was performed.

However, the analysis is ongoing, and recent information indicates that smaller volumes are likely in the future. As a result, the Management Plan includes one additional, smaller size option, that of 20,000 cubic feet per year and the same 450,000 cubic feet of decommissioning waste.

4.4G: **Page 4-7 (Step 5): A Siting Plan should be developed prior to initiation of facility siting. Waiting until the siting process is initiated before this plan is developed will lead to confusion and indecision. Every stakeholder's role should be outlined before the Board votes to initiate siting, so that there is no misunderstanding as to the expectations and responsibilities of the many parties involved.**
Response: The "Disposal Facility Siting Performance Plan" described in Section 4.4 is, in effect, the basis of a "siting plan," and would be expanded in greater detail for distribution to all municipal CEOs and others pursuant to the requirement of Chapter 111H that such individuals be notified of the Board's vote to initiate siting. Such a plan would be one of the first activities of the Board following any vote to initiate facility siting.

4.4H: **Page 4-8 (Step 6): Regarding the selection of compacting or contracting, it is not clear that MA would be able to prohibit out-of-state LLRW waste from entering its in-state disposal facility if the agreements between the Commonwealth and other states were contractual rather than legislative (compact). A legal analysis should be performed before this option should be considered viable.**
Response: See response to comment 2D, this volume.

4.4I: **Page 4-8 (Step 9): Consider using the word "exclude" in place of "exclude from further consideration." Though it is difficult to see what may come up in the future that would warrant revisiting excluded areas, the possibility exists.**
Response: Chapter 111H, section 20, provides the procedure that would be followed by the Management Board to identify one or more "superior" sites, if the Board initiates siting. The steps in siting include statewide mapping and screening [paragraph (a)]; identifying "possible locations" [paragraph (b)]; identifying candidate sites [paragraph (c)]; and conducting preliminary characterization [paragraph (d)] as part of the Draft Candidate Site Identification Report. Section 20 provides that the Board must vote to accept, amend, or reject the Draft Candidate Site Identification Report. If the Board fails to accept or amend this report, "...the report shall be set aside and the procedures established in this section shall be repeated; provide, however, that the Board shall issue its revised draft report within four months of the expiration of the time for it to accept or amend the previous Candidate Site Identification Report."

4.4J: **Page 4-9 (Step 13): Reference is made to the use of "additional information from preliminary screening." Is this information collected during "screening activities" discussed in Step 9? There should be an information collection phase that forms the basis for selection of Candidate Sites. For example, once locations are identified, additional studies including limited field work are initiated to develop a data base for selection of candidate sites. Is the preliminary characterization study discussed in Appendix 5A, page 5A-17, section 1.85, intended to be the source of the "additional information?"**

Response: Chapter 111H, section 20(c)(1), requires that the candidate site identification report include the "...results of a preliminary characterization of the meteorology, surface and groundwater, geology, tectonics, geomechanics, air quality, ecology, land use, cultural resources, and social characteristics of each...possible location." Section 20(d) specifies that, for preliminary characterization, the Board may authorize entry "...upon any lands, waters, and premises...for the purposes of making surveys, soundings, drillings and examinations as the Board deems necessary or convenient..." However, preliminary characterization does not require such on-site work. It may amount to less intrusive activities.

These requirements and the statements in Appendix 5A require that information be developed in addition to that obtained in the "Step 9" screening phase, and are referenced in "Step 13." The intent is that a portion of this information be obtained from preliminary characterization field work as well as from sources such as local records.

4.4K: **Page 4-9 (Step 14): The Draft Candidate Site Identification Report should be issued when the candidate sites are identified.**
Response: The Draft Candidate Site Identification Report will be the first public identification of two to five candidate sites. The report will describe these potential sites and will include the results of a preliminary characterization of the meteorology, surface and groundwater, geology, tectonics, geomechanics, air quality, ecology, land use, cultural resources, and social and economic characteristics of each potential site. The two steps involved in this stage of siting – identifying candidate sites and completing "preliminary characterization" activities in order to issue a report naming at least two, but not more than five, candidate sites which are "...best able to satisfy the site selection criteria..., are potentially licensable, capable of being developed, and otherwise appropriate for detailed site characterization...." were separated in the "Disposal Facility Siting Performance Plan."

4.4L: **Page 4-11: It is not clear when the operator is selected and when the disposal technology is selected. If the operator is selected simultaneously with technology selection, the expense of bidding on all conceivable technology options may reduce the number of companies willing to respond to the RFP. Also, the site community may like a certain contractor but not his proposed design. Selecting the operator after selecting the preferred design poses less risk to the bidders and the site community.**
Response: The Community Supervisory Committee of the superior site selects the operator from among the applicants certified by the Board as satisfying the Operator Selection Criteria regulations on financial, technical, and management abilities and experiences. The selection of the operator results in the simultaneous selection of the technology to be used. This point will be made clearer on pages 4-11 and 4-12 of VOLUME I, and in the Operator Selection Criteria regulations.

4.4M: **Page 4-13 (Step 34): Regarding the Management Board's recommendations to improve the safety or efficiency of any disposal facility, it is not clear how the federal government's GTCC waste facility would affect the Board's determinations regarding appropriate waste acceptance criteria for a MA disposal facility. A discussion of how this affects MA would be helpful.**
Response: Page 4-13 will be revised to provide a summary of the discussion contained in Chapter 13 of VOLUME II on the impact of a federal disposal facility for Greater than Class C (GTCC) waste on the Board's determinations regarding waste acceptance criteria for a Massachusetts disposal facility.

4.4N: **Page 4-15 (Step 36, paragraph 1): The word "three-" in the second line should read "third."**
Response: Typographical errors, such as the one identified by this commenter, will be corrected in the revision of the draft Management Plan.

4.5 Recommendations for LLRW Management

4.5A: **Page 4-16 (Recommendation #1): Item (2) should specifically describe those Board communications that could be kept confidential pursuant to the state's Public Records Law.**
Response: M.G.L. c.4, s.7, clause twenty-sixth defines "public records" as "all books, papers, maps, photographs, recorded tapes, financial statements, statistical tabulations, or other documentary materials or data, regardless of physical form or characteristics, made or received by any officer or employee of any agency, executive office, department, board, commission, bureau, division or authority of the Commonwealth, or of any political subdivision thereof, or of any authority established by the [Legislature] to serve a public purpose..." unless such materials or data fall within 13 exemptions. The exemptions that would apply to activities of the Management Board include records solely related to internal personnel rules and practices; personnel and medical files; inter-agency or intra-agency memoranda; personal employee notes; investigatory materials compiled by law enforcement officials; trade secrets or commercial or financial information voluntarily provided to an agency for use in developing governmental policy; and contract proposals and bids until they are publicly opened.

The Board will revise page 4-16 to summarize the state's Public Records Act.

4.5B: **Page 4-16 (Recommendation #2): The classification scheme of the Commonwealth should be consistent with the NRC's classification system and with the uniform manifest system currently being developed.**
Response: The LLRW classification system proposed for the Commonwealth incorporates the NRC classification system in its entirety. In addition, the Massachusetts systems goes beyond the federal system to capture additional LLRW characteristics relevant to other waste management considerations. The system also captures the information currently proposed for the NRC's uniform manifest system and will be revised to be consistent with the final manifest.

4.5C: **Page 4-16 (Recommendation #3): We question the efficacy of MA becoming an Agreement State, especially since the Governor's Advisory Council on Radiation Protection has recommended against such action.**
Response: The Governor's Advisory Council on Radiation Protection has not recommended against Massachusetts becoming an Agreement State. The Council supports Governor Weld's application to join the Agreement State program, and has urged the Administration to provide resources necessary to get the program established, before user fees can be collected to finance all Agreement State costs.

4.5D: **Page 4-16 (Recommendation #3, paragraph 1): The impression is given that if MA does not become an Agreement State, there will be no regulatory oversight of on-site storage of LLRW if access is denied. This is not accurate; NRC will continue its inspection and regulatory programs.**
Response: Nothing in this recommendation was meant to declare, or imply, that oversight of on-site storage would not occur if the NRC continued to license radioactive materials users, rather than DPH under an Agreement State arrangement.

4.5E: **Page 4-16 (Recommendation #3, paragraph 2): Other places in the Plan refer to 180 LLRW generators and 103 who ship waste for disposal. The reference to "several hundred" storage sites existing, if disposal capacity is lost, should be changed to be consistent with other parts of the Plan.**
Response: The reference to "several hundred storage sites" means the 100 or so LLRW generators who currently ship waste off-site for disposal, as well as the 100 or so that hold waste on site to decay in storage. The Plan will be revised to more clearly delineate the number of storage sites that may result.

4.5F: **Page 4-16 (Recommendation #3, paragraph 4): Should be updated to reflect the current status of the Agreement State application, and the recommendation of the Governor's Advisory Council on Radiation Protection not to enter into such an agreement.**
Response: This paragraph will be revised to reflect the latest date for NRC action on the Massachusetts Agreement State application, filed by Governor Weld in July, 1992. The Governor's Advisory Council on Radiation Protection has not recommended against Agreement State action.

4.5G: **Page 4-17 (Recommendation #4): There is confusion over whether the Board or DPH has responsibility for coordinating the volume and source minimization program. The description of this program should be consistent throughout the Plan.**
Response: The Board believes the language of recommendation #4 clearly delineates the Board's role as a "recommender" of source and waste volume minimization policy, and DPH's role as regulator of such a program. However, the language will be reviewed to ensure clarity.

4.5H: **Page 4-17 (Recommendation #5): The word "or" used between "safety" and "efficiency" in the title of this recommendation should be replaced with "and." The use of "or" as the conjunctive implies that there could be a tradeoff between the safety and the efficiency of the treatment technologies and practices. Safety should not be sacrificed for efficiencies or operation.**
Response: Opinion noted. The word "or" is used in Chapter 111H relative to this same phrase (i.e., "recommendations for regulatory or other actions to improve the safety or efficiency of...technologies and practices..."), and has been repeated throughout the Management Plan. The word "or" is appropriate, as the intent of this recommendation is to foster technologies and practices that improve either safety or efficiency. The Board does not believe that improvements to both safety and efficiency are necessary in order for a change in technology or practice to be desirable.

In some circumstances, there can be a tradeoff between safety and efficiency. That is why the Board has not sought to promote waste treatment efficiencies in every circumstance, but rather is encouraging treatment only where it is appropriate in light of its health and environmental impacts, as well as its economic viability.

4.5I: **Page 4-18 (Recommendation #5): Paragraph (8) is confusing. Paragraph (7) says DPH would enforce the regulations regarding treatment technologies and practices, if MA becomes an Agreement State. Paragraph (8), however, states that a radioactive materials licensee would have to submit its request for a license amendment to both the Board and to DPH. For efficiency sake, and in order to be consistent with the DPH draft regulations, the licensee should submit its amendment request only to DPH. The Board would have to have an organization as large as DPH's Agreement State regulatory office in order to review license amendments from some 400 radioactive materials users in MA.**
Response: Chapter 549, section 5, of the Acts of 1987, authorizes DPH to amend the terms and conditions of licenses in existence as of the date Massachusetts becomes an Agreement State, but only if the Management Board determines that the application for an amendment is consistent with the Management Plan. The Board would not have to conduct a full-scale review of the application in order to make this determination.

4.5J: **Page 4-18 (Recommendation #6): The statement that mixed waste cannot be stored on site legally should be put into the context of the current regulatory posture of and the NRC and the U.S. Environmental Protection Agency (EPA). It is not accurate to imply that mixed waste generators are conducting illegal activities. It is also inaccurate to imply that mixed waste generators are purposely failing to acknowledge the types and quantities of mixed waste they produce because they are caught in the bureaucratic morass of EPA and NRC.**
Response: The discussion of current mixed waste regulation is not intended to imply criticism of on-site storage practices, but rather to illustrate the dilemma caused by inconsistent regulatory programs. Some mixed waste can be stored easily and without incident, and yet such storage is technically illegal in this "Catch 22" situation. This section will be revised to clarify this point.

The Board has no direct knowledge of whether generators purposely fail to acknowledge the totality of mixed waste they produce.

4.5K: **Page 4-19 (Recommendation #6): A new paragraph should be added as a recommended action that requires the Board, DPH, and DEP to work with the federal EPA and NRC to resolve the regulatory dilemma of mixed waste. This should be done before MA becomes an Agreement State (if that be the case), so that the federal regulatory dilemma is not transferred to the state agencies.**
Response: Through Its participation in the national LLW Forum, the Commonwealth is actively lobbying both EPA and NRC to resolve the current mixed waste regulatory dilemma. As a result of pressure from the Forum, the NRC and EPA agreed to establish a task force to identify regulatory problems, and develop solutions. This effort is under way, albeit slowly, and the Management Board continues to press for national mixed waste solutions.

4.5L: **Page 4-21 (Recommendation #9): It is inaccurate to say in the first sentence that "the decommissioning of major LLRW generators at a time when no long-term disposal facilities will be available means that waste resulting from decommissioning will need to be stored temporarily on site." There are disposal facilities currently available for decommissioning waste. Texas Instruments, the U.S. Army, and Yankee Atomic are currently sending their decommissioning waste to disposal facilities.**
Response: The sentence in question refers to a period when no long-term disposal is available; such is not currently the case. However, the first sentence will be revised to more clearly make this point, as follows: "Since the decommissioning of radioactive materials user facilities may occur during the period when limited or no disposal facilities are available to Massachusetts generators, some of these wastes may have to be stored temporarily on site."

4.5M: **Page 4-21 (Recommendation #9): Paragraph 3 dealing with occupational radiation exposure levels should be deleted, since keeping exposures ALARA is not the responsibility of the Board.**
Response: The statement cited in the comment is not meant to imply any responsibility on the part of the Management Board with respect to the regulation of decommissioning activities. The Management Board can, as suggested by the statement, monitor such activities and provide comment to the NRC, as could any other agency, group, or interested citizen. Therefore, the Management Board does not consider it necessary to amend the statement as suggested by the commenter.

4.5N: **Page 4-21 (Recommendation #9): Paragraph 4 should be deleted, as the citizens of MA (including the Board) can participate in the review of the decommissioning plans through the mechanisms already established by the NRC; there is no need for the Commonwealth to consider whether an Environmental Impact Statement (EIS) is necessary, or to communicate its recommendation to the NRC. Yankee's decommissioning plan, scheduled to be submitted to the NRC in the fall of 1993, will be a public document subject to public review and comment. The Board is welcome to review and provide comments.**
Response: The Management Board believes that consideration should be given to recommending an EIS be done for the Yankee Rowe decommissioning. The Management Board and other state agencies will continue to evaluate Yankee decommissioning plans with respect to issues within their jurisdiction and as interested parties. The applicability of an EIS and a recommendation to NRC would be considered as this review progresses. Therefore, the Management Board does not believe that a change to the Management Plan is warranted at this time.

4.5O: **Page 4-23 (Recommendation #13): The facility size options should be updated to reflect current disposal volume scenarios, facility design technologies, and costs.**
Response: The facility size options specified in the Management Plan reflected the best waste volume estimates available to the Board at the time the analyses were performed. The technologies used to estimate these facility sizes represent those being considered for other state and regional LLRW programs and those consistent with Chapter 111H. Costs developed for these facilities were based on economic models, design studies, and cost factors developed for the National LLRW Program sponsored by the U.S. Department of Energy (DOE), with cost data updated to reflect 1992 dollars and Massachusetts-specific siting costs estimates.

However, projections of possible future LLRW waste volumes have been revised downward, and facility size and economic estimates reflecting the lower projection are being added to the Management Plan. See responses to 4.4F above and 15.6F of VOLUME II.

4.5P: **Page 4-24 (Recommendation #20): A description of "Strategic Regional Plans" would be helpful.**
Response: The referenced paragraph will be revised, summarizing the planning requirements of the Intermodal Surface Transportation Efficiency Act, a recent federal law that requires statewide and regional transportation planning. Final federal regulations governing metropolitan transportation planning were issued by the U.S. Department of Transportation (DOT) in November, 1993, and are now in effect.

4.5Q: **I don't trust the figures in the Survey Report and the Draft Management Plan regarding the economic impacts of businesses generating LLRW. Board should check up on the companies to be sure.**
Response: Although the Management Board can do a limited amount of cross-checking, data regarding the revenues, costs, and number of employees associated with the use of radioactive materials can most accurately be determined and provided by radioactive materials users. Based on the uses of radioactive materials as the Management Board understands them, the figures provided by radioactive materials users as a whole appeared to be reasonable. The Board will continue to survey Massachusetts radioactive materials users routinely on the financial impacts and jobs resulting from their activities, and will compare projections against performance.

4.5R: **The Management Plan and the DPH regulations for Agreement State should make clear that sites which are being remediated or decommissioned are not subject to the proposed regulations, particularly when such sites are adequately regulated under other federal or state programs. Further, DPH regulations should not apply to sites where licenses have been legally terminated, but which are now undergoing additional remediation. At a bare minimum, the Plan and the regulations should clarify how they are intended to interact with existing regulations and regulatory programs, in order to prevent unnecessary, duplicative and potentially contradictory regulatory requirements which could unnecessarily slow the remediation of decommissioning sites.**
Response: See response to comment 14.5A, VOLUME II.

Vol. I Chapter 5: Summary of Issues Affecting LLRW Management

5.2 Radiation Sources

5.2A: **Changes that should be made in VOLUME II, Chapter 3, should also apply to this part of VOLUME I.**
Response: This chapter will be revised to reflect Board-approved revisions to VOLUME II.

5.5 History of LLRW Management

5.5A: **Page 5-6: A footnote under the last column of the Barnwell site is mislabeled in Table 5-1. Footnote "e" should be changed to clearly explain that although Barnwell opened in 1969 as an above-ground LLRW storage facility, it now uses shallow land burial.**
Response: This correction will be made as part of the Management Plan revision.

5.5B: **Page 5-6: In Table 5.1 under "Site Problems Leading to Closure," "waste," should be "water" in the West Valley, NY, column.**
Response: This correction will be made as part of the Management Plan revision.

5.6 LLRW Management Laws

5.6A: **Page 5-7, paragraph 1 should be revised to remove Vermont and Maine from the list of "unaffiliated" New England states. Footnote 4 should be revised to remove Texas from the list of other unaffiliated states.**
Response: These corrections, which will accurately portray the status of the new Maine-Vermont-Texas compact, will be made as part of the Management Plan revision.

5.6B: **Page 5-8, paragraph 3: It would be helpful to the discussion of Chapter 503 if the Board would present a legal opinion of its counsel to support the footnoted statement that Chapter 503 may not be applicable to LLRW siting activities under Chapter 111H. The legal applicability of Chapter 503 has a significant impact on the decisions of the Board in arranging for a compact or in siting an in-state facility. It would be prudent to address the applicability of Chapter 503 now, since potential compact partners see it as a major obstacle to siting in the Commonwealth.**
Response: A legal opinion from the Management Board's counsel regarding Chapter 503's applicability would not resolve the issue. The Board does not believe that, if it decides to site a regional disposal facility, the existence of Chapter 503 will necessarily prevent the Commonwealth from concluding a compact agreement for its use. It is appropriate for the Board to review relevant state laws and regulations at the time, to determine if problems are created that require a response. Chapter 503 remains on the books as MA law.

5.18 Decommissioning

5.18A: **Page 5-30, paragraph 2: The basis for the statement "NRC rules require a licensee to comply with the regulations of other federal and state agencies, before a site can truly be considered by the NRC to be safe for "unrestricted use"' should be supplied, as it is inconsistent with the termination of license requirements in 10 CFR 50.82.**
Response: As a matter of policy, the NRC does not release a site or terminate a license unless the licensee reaches agreement with other agencies regarding remediation of other types of site contamination. The Management Plan will be revised accordingly.

5.18B: **Page 5-30, paragraph 3: Suggest replacing the sentence "The NRC does not allow this method for the decommissioning of nuclear powered utility plants" with the following: "The ENTOMB storage period necessary for a nuclear powered utility plant would significantly exceed the 60-year limit referred to in the SAFSTOR alternative. Therefore, the ENTOMB alternative is not appropriate for a nuclear-powered utility plant."**
Response: The Management Board agrees that alternate wording is appropriate. The following will be substituted for the sentence at issue: "Evaluations of decommissioning alternatives have led the NRC to conclude that ENTOMB is not a practical decommissioning alternative for nuclear reactors."

5.18C: **Page 5-30: The last sentence of the last paragraph on page 5-30, which carries over to the next page, should be modified to incorporate the following comments: "Yankee Rowe's early shutdown does not directly result in MA becoming responsible for the plant's LLRW. If Yankee operated until 2000 or beyond, MA would have been more likely to have a compact**

arrangement or an in-state LLRW facility and therefore been responsible for the waste. Because Yankee shut down earlier, Yankee will be able to dispose of some of its decommissioning waste at out-of-state disposal facilities." Additionally, the numerical data presented should be updated. A suggested rewording of the sentence, "In the instance of the Yankee Rowe decommissioning, the timing of Yankee Atomic's decision to shut down the plant, and unavoidable delays in decommissioning due to a lack of LLRW, high-level radioactive waste (HLW), and spent fuel disposal facilities, mean that MA most likely will become responsible for the disposal of the 94,000 cubic feet of LLRW containing approximately 192,000 curies of radioactivity originating at that site," is as follows: "In the instance of the Yankee Rowe decommissioning, MA will be responsible for most of the LLRW originating from the site. Currently Yankee has about 95,000 cubic feet of LLRW containing approximately 192,000 curies. Yankee is currently executing a project to dispose of several plant components, reducing the waste volume to about 80,000 cubic feet of LLRW containing less than 10,000 curies."
Response: The Management Board will revise the statement to reflect this data regarding the disposal of waste from the decommissioning component removal project and the remaining LLRW from decommissioning that must be managed at an LLRW disposal site in the future.

5.18D: **Page 5-31: Change the sentence in the first full paragraph that reads "However, the decommissioning of the Yankee Rowe plant may not be completed for a decade or more, because no federal disposal facilities will be available until that time for the disposal of the HLW and spent fuel present at the Rowe site," to "However, the decommissioning of the Yankee Rowe plant may not be completed for a decade or more beyond that date, when shipping will be completed of all HLW and spent fuel present at the Rowe site to a federal disposal facility."**
Response: See response to comment 14.2C, VOLUME II.

5.18E: **Page 5-31: The statement in the last sentence of the first full paragraph is inaccurate regarding the potential financial burden of providing temporary storage off-site. Temporary off-site storage could be attractive financially.**
Response: See response to comment 14.2D, VOLUME II.

5.18F: **Page 5-31: The second to last paragraph is misleading. While it may be true that political considerations would make other states and compacts that are developing new sites reluctant to accept any non-compact waste, Yankee's decommissioning waste should not pose a significant problem in negotiating a regional agreement. Furthermore, Yankee is not the first commercial nuclear power plant in the nation to decommission. Fort St. Vrain in Colorado is currently shipping its decommissioning waste to Hanford. Moreover, the decommissioning waste from the Yankee Rowe plant is no different than the decommissioning LLRW from non-commercial reactors. For example, the Shippingport unit in Pennsylvania was decommissioned, and its LLRW waste was shipped for disposal to the Hanford, Washington site. Since 1960, more than 70 test, demonstration, and power reactors ranging in size up to 256 megawatts have been retired in the U.S.**
Response: The Management Board agrees with the commenter's assertion that decommissioning waste from a nuclear power plant should be accepted at any disposal facility that accepts LLRW from other types of radioactive materials users. However, that does not change the fact that representatives of some newly siting states have cited decommissioning waste from Yankee Rowe as a reason they would be reluctant to accept Massachusetts LLRW. The paragraph will be revised to accurately depict the political sentiment expressed by these newly siting states.

5.19 Old Burial Sites Undergoing Decommissioning

5.19A: **Page 5-32: The status of the Watertown Arsenal decommissioning and the removal of depleted uranium at the Concord facility of Nuclear Metals, Inc. (NMI) should be updated.**
Response: These projects will be updated to reflect the latest status. At the present time, the Watertown Arsenal has dismantled the reactor and shipped the LLRW materials from this facility as well as from other facilities on the site to the Barnwell disposal facility. The decommissioning project is not yet complete, however.

NMI says it plans to recover and recycle metals in the holding basin on its premises. A basin characterization study has been submitted to NRC prior to submittal of a formal plan for remediating the basin. The recycling program has not yet received approval from the NRC or the Commonwealth.

5.20 Analyzing LLRW Disposal Technologies and Practices

5.20A: **Page 5-38: The cost analysis of the various facility designs and facility capacities should be updated. The referenced DOE report was issued in March, 1988. The financial analysis used in that report is outdated when compared to the experience of states and compacts that are currently trying to site new LLRW disposal facilities. For example, Illinois spent over $85 million dollars on a volunteered site, only to have the Siting Commission reject the site. Now the state and its compact are starting over. The development costs of the other compacts and states listed are similarly underestimated. In Texas, the latest estimates indicate that disposal costs will be on the order of $250 per cubic foot.**
Response: Although the Management Board used the DOE economic model to calculate user disposal fees and life-cycle costs, the cost factors used by the model to calculate these values were updated to reflect more current development cost parameters and the expected siting costs in Massachusetts. Therefore, the analyses did not use the 1988 default cost factors. Also, see response to comment 15.6F, VOLUME II.

VOLUME II, LLRW MANAGEMENT PLAN

Chapter 1: The Challenges of Effective Low-Level Radioactive Waste Management

Background:

Chapter 1 explains the need for an LLRW Management Plan and provides a brief history of LLRW management, in the nation as well as the state.

Because federal law assigned LLRW management and disposal responsibility to each of the 50 states, either inside or outside a state's borders, Massachusetts has embarked on a program to:

- ensure that LLRW is managed and disposed of in a manner that ensures the protection of public health and safety, and the environment;
- reduce radioactive sources that can lead to LLRW, and minimize LLRW volumes once the waste is generated; and
- educate the public about the use of radioactive materials, the nature and characteristics of LLRW, and the hazards associated with improper LLRW management.

Various state-supported activities involving LLRW management have occurred since 1965, when the MA Advisory Council on Radiation Protection was established. Other highlights of the history of LLRW-related endeavors include:

- the passage of Chapter 503 in 1982, an initiative that requires two separate approvals (Legislature and citizens) before an LLRW facility can be sited;
- the passage of Chapter 111H in December, 1987; and
- the creation of the LLRW Management Board in July, 1988.

Appendix 1A provides specifics about seven commercial LLRW disposal sites. When the 14 original federal LLRW disposal sites were closed to commercial (non-federal) LLRW generators in 1960, sites were established around the nation, beginning with the Beatty, Nevada, site in 1962. The last site to open was the Clive, Utah, site, which began operation in 1988.

Three of these sites (Maxey Flats, Sheffield, and West Valley) closed between 1975 and 1978, due to various operational and environmental problems including water infiltration into trenches; radioactive contaminant movement out of trenches; geologic unsuitability; poor management methods, and inadequate funds for closure and institutional control.

1.2 A Brief History of Low-Level Radioactive Waste Management

Public Comments:

1.2A: The public's fears are substantiated by five decades of engineering and management failures.
Response: Opinion noted. While this commenter may be referring to problems in addition to those that have occurred at some of the six LLRW disposal sites, it is not clear. Six commercial sites established for LLRW disposal opened between 1962 and 1971, and all but one (Barnwell, South Carolina), are closed to Massachusetts generators today. Various operational and environmental problems occurred at three of the sites (Maxey Flats, Kentucky; Sheffield, Illinois; and West Valley, New York). These facilities are now closed, although New York is exploring the possibility of using the West Valley site for a new LLRW disposal facility. In accordance with the wishes of the Nevada state government, the facility at Beatty, Nevada, stopped accepting LLRW on December 31, 1992. The facility at Hanford, Washington, is still open, but only to LLRW generators in the Northwest and Rocky Mountain Compacts. There is also a disposal facility operating in Clive, Utah, available only for high-volume, low-radioactivity LLRW.

Massachusetts and other states have learned from past experiences in LLRW disposal. For example, Massachusetts law prohibits landfilling of LLRW, one of the major reasons that led to failures at other sites. State law also requires any disposal facility to be capable of monitoring and retrieving any LLRW, so that if a problem arises, it can be quickly detected and resolved to avoid the potential for environmental or public health damage.

In addition, Massachusetts law places major responsibilities in the hands of the site community, another way to ensure safe disposal through a system of multiple reviews.

1.2B: Our best effort at siting and building a safe LLRW facility will still not be adequate. Just look at history – we are always too sure of ourselves. There is no hope until we learn to err on the side of safety.
Response: Opinion noted. See response to comment 1.2A.

1.2C: We are aware of the deplorable safety records of existing radioactive waste facilities; we do not endorse the risks of proceeding with an experimental and untested methodology here in MA.
Response: Massachusetts, like all 50 states, has been assigned by the federal government the responsibility for LLRW management and disposal. To that end, if the Management Board determines that a disposal facility should be sited in the Commonwealth, it will follow the procedures identified in Chapter 111H and LLRW siting and management regulations of the Board, DPH, and DEP, as well as all other laws that pertain to LLRW management.

State law gives the community where a "superior" site is identified the authority to select the disposal method which best meets community needs. However, such selection is not open-ended. The community must choose from methodologies certified by the Management Board as part of its certification of applicants to operate the facility.

1.5 Massachusetts LLRW Management: A Brief History

Public comments:

1.5A: **The Board has always planned to site an in-state disposal facility.**
Response: A statement will be inserted in the revised Management Plan, clarifying that in-state facility siting is not automatically the Management Board's or Commonwealth's intent.

1.5B: **Board has made no honest effort to enter into an out-of-state agreement.**
Response: This section of the Management Plan ends with the entry "Since 1990" and a general statement that the three responsible agencies (Management Board, DEP, DPH) are working to complete the requirements of Chapter 111H. The Plan will be revised to perhaps refer to the active discussions held with other states and regional compacts, and will reference the regional compacting chapter, Chapter 6, which describes in great detail the efforts of the Commonwealth to complete an out-of-state disposal agreement. The Board and its predecessor, the Special Legislative Commission on LLRW, have sought such an agreement since 1986.

1.5C: **Carol Amick and Governor Weld have already decided to site a disposal facility in state.** (+2)
Response: Opinion noted. Chapter 6 of the Management Plan summarizes the Board's attempts to negotiate agreements with other states and compacts. No decision has been made to site a facility in Massachusetts.

Appendix 1A - Six Commercial LLRW Disposal Sites: Operations and Problems

Public comments:

1AA: **Whenever an existing disposal site leaks, the government just buys the land around it, so they can say nothing has leaked off the site.**
Response: Leaks at old LLRW disposal sites have caused radioactive contamination to move out of the disposal trenches, but there is no evidence that contamination has moved off the sites, which include buffer areas around the waste disposal areas. No land has been purchased to avoid references to off-site leaks. In Massachusetts, Chapter 111H authorizes the site community to oversee all site monitoring activities. The law's prohibition of shallow land burial, and its requirement that LLRW must be monitorable and retrievable, reduce the likelihood that any leaking waste packages would go unnoticed and cause any public health or environmental damage.

1AB: **The leaking old LLRW disposal sites are costing millions to clean up, and show a poor record of waste management. The same mess will happen in Western MA.**
Response: The Commonwealth has learned from mistakes at other disposal facilities, and has adopted statutory policies that require LLRW monitoring and retrievability. Also, because shallow land burial is illegal in Massachusetts, there would be more barriers between the waste and the environment. At this point, no decision has been made to site an LLRW facility anywhere in Massachusetts.

Chapter 2: The Regulatory Framework for Managing Low-Level Radioactive Waste [The Federal, State and Local Role in LLRW Management; Recommendations on Agreement State Status]

2.2 The Federal Role in LLRW Management

Background:
The federal Low-Level Radioactive Waste Policy Act of 1980 assigns to each of the 50 states the responsibility for LLRW disposal, either inside or outside a state's borders. It also encourages states to establish regional agreements, called "compacts," to site and operate regional disposal facilities. An incentive to regionalize is a provision in the law that allows regional compacts to exclude waste from outside their regions.

1985 amendments to the federal act strengthen the requirements for state action to assume disposal responsibility, and include mandatory deadlines, incentives and penalties to force unsited states and regions to build new facilities. The most significant of all deadlines was Jan. 1, 1993, the federally mandated date when the three sited states of South Carolina, Nevada, and Washington could cease accepting waste from out-of-region generators.

The lead federal agency for LLRW management is the U.S. Department of Energy (DOE). The chief regulatory agency responsible to determine radiation protection standards, and to license radioactive materials users and LLRW disposal facilities is the U.S. Nuclear Regulatory Commission (NRC). The other federal regulator, the U.S. Environmental Protection Agency (EPA), sets radiation standards limiting public exposure from air emissions and drinking water supplies, and, in concert with the NRC, controls the "mixed" waste category.

[NOTE: Public comments in this section are grouped under four subtopics – federal role: general; LLRW management should be a federal responsibility; EPA control, regulation; and federalizing any site in Massachusetts.]

Public Comments:

(1) Federal role: general

2.2A: **The federal LLRW management policy is unjust.**
Response: Many individuals, including Board members, have expressed the opinion that federal law is unfair because of the reduction in the amount of LLRW nationwide, and the differences in hydrogeology from state to state, making facility siting more complex, expensive, and sometimes questionable.

While Board members and some citizens may feel the federal policy is unjust, short of a change in federal law, the current policy will continue. The Board has frequently discussed the fact that if it uses its energies to change the current system, it may fall behind in meeting other necessary responsibilities – of both federal and state law.

2.2B: **Federal policy will cause too many new disposal sites, new places to have accidents. People will get sick.**
Response: The commenter's argument is with the federal law, and with the uncertainty of health effects from disposal facilities. The current regulatory scheme for LLRW management, facility development, and radiation protection of the public is believed to be adequate, based on current knowledge and acknowledgement of scientific uncertainty regarding the health effects of ionizing radiation at very low doses (1-25 millirem), such that development of LLRW facilities can proceed if the Board votes to develop such facilities in the Commonwealth. The requirements of Chapter 111H, M.G.L. c.111 (Massachusetts radiation protection requirements), and the regulations of the Management Board, DPH, and DEP supplement the federal regulations to ensure additional protection of the public health. Nevertheless, the Management Board will actively monitor radiation health studies, and related science and technology, and will revise development plans and standards as required to reflect the latest information.

2.2C: **The feds probably assume they can make states responsible for spent fuel rods, too.**
Response: Given the amount of federal effort and resources spent to date to identify both a monitored retrievable storage facility and a high-level waste repository – as well as the difficulty experienced by many states and compact regions to site LLRW disposal facilities – it is unlikely that Congress would transfer HLW responsibility to the states. If that were to happen, however, the Massachusetts definition of LLRW freezes the types of radioactive materials that are considered LLRW as of the enactment date of Chapter 111H. MA law would not allow the Commonwealth to assume HLW management responsibility.

2.2D: **Because there is no consistency in federal regulations nor an undisputed federal authority (NRC, DOT, EPA, DOE have contradictory policies), it is premature for a state to seek a solution.**
Response: With the exception of the federal regulations pertaining to mixed waste and the yet-to-be-issued radiation protection standards of the EPA (which could conflict with current NRC standards), the other federal regulations and policies regarding LLRW management are not in conflict.

2.2E: **The next round of Republican administrations may reinstate the "take-title" provision and make it stick.**
Response: Opinion noted.

2.2F: **The nuclear industry is shoddily regulated.**
Response: Opinions about the quality of regulation of the nuclear industry ignore the fact that until there is no LLRW requiring management, policies and procedures that ensure the protection of the public health and the environment must be implemented.

2.2G: **It's really an international concern.**
Response: Opinion noted.

(2) LLRW management and disposal should be a federal responsibility

2.2H: **This is not a state problem; it's a national problem, and should be a federal responsibility. Products are often consumed across state lines.** (+3)
Response: LLRW management is a problem all across the country.

2.2I: **We need a central, coordinated system. With a centralized national site, the use of the newest technology would be assured. A federal site could also be a center for research on source reduction, safe disposal, etc. Feds are a big contributor to the problem, so this would make sense.** (+5)

Response: Unless and until the federal government assumes responsibility for commercial LLRW disposal, the states are obligated to fulfill their roles under federal law.

2.2J: **Federal government should be responsible for any radioactive waste requiring more than 100 years of storage.**
Response: It would certainly be easier for the states to manage LLRW containing radionuclides with half-lives of 10 years or less; however, unless and until the federal government assumes the responsibility for all waste with longer than 10-year half-lives, the state is charged with this responsibility. The Management Plan recommends that all long-lived LLRW be segregated from short-lived LLRW in any in-state disposal facility, for purposes of easier management and better control of long-lived waste. The Plan does not, however, recommend specific definitions to distinguish "short-lived" from "long-lived" waste. The Board would establish that differentiation after public meetings and public discussion, were an in-state disposal option pursued.

2.2K: **The site should be on a military base that has shut down. They are usually polluted already anyway. (+1)**
Response: If the Management Board initiates siting, all areas of the state would be macro- and micro-screened for environmental suitability. A site on a military base would have to meet the same environmental criteria as any other potential site.

2.2L: **Since the federal government subsidizes nuclear power, which would otherwise be economically unacceptable, the feds should be responsible for LLRW from nuclear power plants. (+2)**
Response: Some commenters indicated a preference over certain LLRW (e.g., that generated by medical research) over other LLRW (e.g., that produced by nuclear power plants). Federal and state laws define LLRW not by what types of commercial radioactive materials users are involved, but by the quantities and concentrations of the radionuclides in the waste.

(3) EPA control, regulation

2.2M: **EPA has proposed stricter standards than NRC, and should take charge of regulating radioactive materials users.**
Response: If and when EPA sets radiation protection standards, all states and radioactive materials users will be required to follow them. If EPA assumes the current responsibilities of the NRC, all states and radioactive materials users will be obliged to follow.

2.2N: **The adoption of the EPA's regulations should be a prerequisite for the adoption of MA regulations, which should be at least as strict as the EPA regulations.**
Response: MA will comply with whatever federal regulations require, and, where appropriate, may be more stringent. MA cannot, however, ignore its responsibilities for managing LLRW now.

(4) Federalizing any site in Massachusetts

2.2O: **Concern that through the federal emergency provision, a MA site could be nationalized by the federal government, and would have to accept one-third of the LLRW from the whole U.S. (+3)**
Response: The comment refers to the federal LLRWPAA provision that allows an LLRW generator or a state to seek "emergency access" to a non-federal operating disposal facility. Section 6 of the Amendments Act authorizes the NRC to override access denial and grant waste generators emergency access. In order to receive such access, a generator or state must petition the NRC and demonstrate that access is necessary to avoid a "serious and immediate threat to the public health and safety or the common defense and security, and that the threat cannot be mitigated by any alternative consistent with the public health and safety, including ceasing the activities that generate the waste."
The NRC, in recent statements, has indicated its opposition to implementing the emergency access provisions. The NRC sees this option as a way for the states to avoid meeting their responsibilities under federal law, and refuses to relieve the states of their obligations under the law.

2.3 The State Role in LLRW Management

Background:

Chapter 111H became law in 1987, creating the Low-Level Radioactive Waste Management Board as the state agency responsible for planning and effecting the management of LLRW in the Commonwealth. Other important functions are assigned to the Departments of Public Health (DPH) and Environmental Protection (DEP). The cornerstones of Chapter 111H are a phased, step-by-step approach to planning and implementing LLRW policy; public participation in all state LLRW management actions; and waste minimization to the greatest extent achievable by every LLRW generator.

[NOTE: The numerous comments in this section have been grouped under 12 subtopics. They are state definitions; federal law, regulation; Congressional activity; board composition; conflict of interest; board mission; board actions (general); postpone any action; procedural requirements of Chapter 111H; out-of-state solution; in-state siting; and other.]

Public Comments:

(1) State definitions

2.3A: **Throughout the Management Plan and regulations, and at all times in the future, the Board should say and write "LLRW" instead of "LLW," and "low-level radioactive waste" instead of "low-level waste."** (+1)
Response: The Board agrees to make these changes.

2.3B: **Stop using the term "low-level radioactive waste." Instead, just say "radioactive waste."**
Response: Using only the phrase "radioactive waste" could cause confusion, since there are other types of "radioactive" waste besides "LLRW." They include "transuranic" waste, "GTCC" waste, HLW, "NORM" and "NARM" waste. Some are the responsibility of the federal government; some, the states.

2.3C: **I don't like to be deceived by deceptive words. Board should use words in ways they are defined in a standard dictionary.**
Response: There was no intent by the Plan author or the Management Board to use deceptive terminology. Some LLRW "jargon" is included in the document, and is defined throughout for ease of reading.

2.3D: **"Hazardous life," "short-lived," and some other terms used in the documents require clear definitions.**
Response: The term "hazardous life" would be difficult to define and is not commonly used in Board publications, as the term cannot be applied scientifically. The term "short-lived" is used throughout the Management Plan, and will be defined in the revised document.

2.3E: **The biosphere should not be defined in terms of humans and their food chains. The DPH regulatory language should go further, since the intent is to protect not just human health but the environment in general – the biosphere outside of the waste container. (DPH)**
Response: "Biosphere" is defined in the Management Plan as "the part of the earth's crust, waters, and atmosphere where living organisms can subsist."

2.3F: **The definition of a waste "facility" is flawed. The broad nature of this definition impacts on every radioactive materials user in the state. Each radioactive materials user will be required to comply with the environmental assessment requirements imposed by the Plan, including the commitment of DPH to conduct environmental surveillance around every business or institution in the state that potentially stores LLRW. This includes the state personally inspecting and releasing every LLRW shipment throughout the state.**
Response: "Facility" is defined in Chapter 111H and the Plan as "a parcel of land, together with the structures, equipment and improvements thereon or appurtenant thereto, which, pursuant to Chapter 111H, is being developed, is used, or has been used for the treatment, storage or disposal of low-level radioactive waste; but does not include any property used for temporary storage of low-level radioactive waste in sealed containers by a broker." While the Plan makes the distinction in numerous sections between a facility developed "pursuant to Chapter 111H" and the location of a radioactive materials user's operation, the Management Plan will be revised to emphasize the difference.

2.3G: **Don't say "disposal." That implies we are going to get rid of the problem. It's really storage.** (+2)
Response: In effect, "disposal" as it is intended under MA law is similar to long-term storage, since any disposal facility technology must permit waste retrieval. Because of federal regulatory requirements, the term "disposal" must be used. However, the Management Plan revisions will emphasize the concept of long-term storage in its various discussions of "disposal."

2.3H: **Throughout the Management Plan and regulations, and at all times in the future, the Board should not use "activity" when "radioactivity" is meant.**
Response: The Board will revise the Management Plan and will use the word "radioactivity" whenever possible. In cases where the Plan refers to the "rate" of disintegration rather than the radioactive disintegration itself, the more appropriate term is "activity."

2.3I: **For Vol. I and Vol II, Management Plan should define "environmentally unsuitable lands."**
Response: Typically, this phrase is shorthand for land that would not satisfy the DEP siting criteria. However, the meaning could differ, depending upon its context in the Management Plan. The Board does not feel that the phrase needs to be defined.

2.3J: **"Background level" has become a meaningless term. This number must be "fixed."**
Response: "Background" radiation may vary by locality, internal or external to a facility, by the sensitivity of the instrumentation used, and by the definitions used to describe this concept. Due to these factors, a uniform and consistent "background level" may be inappropriate. At its July 19, 1993, Board meeting, the Board agreed that determining "background" as a baseline for characterizing any potential sites was an appropriate policy, but understood the difficulty of establishing one fixed "background level," due to the variability of various factors comprising this concept.

2.3K: **"Compatibility" needs a definition.**
Response: "Compatibility" is a term mentioned in the Agreement State discussion to describe a state's regulatory program. The Plan states: "In order to become an Agreement State, a state's Radiation Control Program regulations must be compatible with those of the NRC. In some cases, compatibility means the state requirements must be essentially identical to the NRC's. In other areas, however, as long as they meet NRC regulations in "principle," state requirements can be more restrictive." The discussion also refers to regulatory "equivalence," known as "strict compatibility."

2.3L: **"Minimization" needs a definition.**
Response: This term is not defined in either Chapter 111H or the Plan. However, the terms "source minimization" and "volume minimization" are defined.

2.3M: **Board must redefine its "customers" as the residents, land, and environment of Massachusetts, all of which must be protected -- not the generators.**
Response: Chapter 111H requires just that: section 2 creates a Management Board to "act in the public interest." Section 12 requires that the "primary consideration guiding the development of the Management Plan [by the Board] shall be the protection of public health, safety and the environment."

(2) Federal law, regulation

2.3N: **Requiring states to handle their own wastes serves the environment by forcing communities to consider whether the value of toxic materials is worth subsidizing the costs (including health risks) of their disposal.**
Response: Opinion noted.

2.3O: **The Board should challenge the 1985 law passed by Congress.**
Response: The Board successfully convinced the MA Attorney General to challenge the most onerous provision of the Amendments Act: the "take title" requirement. That challenge, which was determined by the U.S. Supreme Court in 1992, was victorious.

2.3P: **Supreme Court "take title" decision renders the whole process unnecessary.**
Response: The U.S. Supreme Court's decision which struck down the "take title" portion of the Amendments Act did not affect the remainder of the federal law. Regardless of the ownership of LLRW, federal law requires the states to manage it, just as federal law requires states to be responsible for solid waste, hazardous waste, and other waste streams.

2.3Q: **Board should challenge the right of the federal government (through the NRC) to say who gets to use radioactive materials.**
Response: The success of such a challenge would be questionable, since the NRC has the regulatory authority to make such decisions.

2.3R: **The Board staff should obtain and become familiar with the "abnormal occurrences" reported in the NRC's Annual Report.**
Response: The term "abnormal occurrence" is defined in section 208 of the Energy Reorganization Act of 1974 as "an unscheduled incident or event which the NRC determines is significant from the standpoint of public health or safety." The term is not used anywhere in the Management Plan. Abnormal Occurrence Reports are compiled by the NRC. The Board's staff will arrange to add these reports to the office library.

(3) Congressional activity

2.3S: **Board should urge Congress and President to re-evaluate U.S. radioactive waste policies. (+1)**
Response: Massachusetts has assumed the responsibility for management and disposal of LLRW, pursuant to federal law, and to ensure the proper and safe management of this waste, just as it does with regard to household trash, toxic chemical "hazardous" waste, and other categories of waste produced in a modern, industrial state. Were the Board to urge Congress and the President to re-evaluate federal LLRW policies, the Commonwealth would continue to be obliged to uphold its statutory responsibilities, unless and until federal law were modified.

2.3T: **Board should request a special White House Commission to re-evaluate LLRW policy.**
Response: The Board will consider this action, while continuing to fulfill its statutory missions.

2.3U: **Board should set up a meeting in September with Congressional delegation to hear public's concerns about LLRW disposal.**
Response: Every member of the MA Congressional delegation is routinely contacted and kept up to date on LLRW management activities. The Board's goal is to meet with all members of the delegation prior to the vote on LLRW management options, including siting, which is scheduled for February, 1994.

(4) Board composition

Background:

The Low-Level Radioactive Waste Management Board is a nine-member state agency, comprised of two Cabinet Secretaries (or their designees) and seven members appointed by the Governor "to act in the public interest." None of the seven gubernatorial appointees is chosen to "represent" a certain interest; all represent the public. However, each of the seven must have "experience, background and professional training" in one of the following areas: public administration, engineering, radiological health, business management, or environmental protection (3 members). In addition, if a facility is sited in MA, two additional Board members must be appointed to represent the site (and also possibly a neighboring) community.

Chapter 111H does not prevent the appointment of persons who are employed in the nuclear industry. The very fact that the law requires a "radiological health" appointee implies that individual works (or did work) in the nuclear field. Two members and one Secretary designee are employed by radioactive materials licensees; a fourth Board member is retired from a company which also is licensed to use radioactive materials.

2.3V: **Board needs more ordinary citizens as members. Instead of experts on someone's bankroll, we need people with experience in joyous laughing, dancing, singing – knowing what the fabric of life has been for us all.**
Response: Board members are citizens, as well as members of the Board.

2.3W: **The Board is just a rubber stamp for Governor Weld, whose campaign was financed by the corporations that want an in-state disposal facility.**
Response: Five of the nine members were appointed by Governor Weld. One of those five was initially appointed by Governor Dukakis. Two of the five are members of the Board because they serve as the Secretaries of Environmental Affairs and Health and Human Services; their membership is required by Chapter 111H, and they send designees to attend meetings in their places. The Board members see their responsibility as the safe management of LLRW, a goal certainly shared by Governor Weld.

2.3X: **It's not good that four Board members will vote whichever way the Governor wants.**
Response: All Management Board members vote based upon their evaluation of each issue, as it relates to safe and environmentally sound LLRW management. Appointed Board members are not told by anyone how they should vote; they were appointed to bring their professional knowledge and experience to assist with a difficult public policy question, and to make informed, reasonable decisions.

2.3Y: **So-called "environmental members" of the Board should never be referred to as "environmentalists." An environmentalist is something entirely different.**
Response: Three members of the Board are appointed by the Governor from lists of candidates whose experience, background, and professional training in environmental protection indicates that they can act in the public interest.

2.3Z: **An independent physician knowledgeable in the field of radioactivity should serve on Board or at least advise.**
Response: Several physicians knowledgeable in the use of radioactive materials provide advice to the Board and Board staff.

2.3AA: **The nuclear industry role in LLRW management should be advisory, not membership on the Management Board.**
Response: Chapter 111H provides for the appointment of persons "whose experience, background, and professional training indicates that they can act in the public interest," and goes on to require members with professional training and experience in public administration, engineering, radiological health, business management, and environmental protection. When the law was written, it was assumed that most health physicists who would be qualified for the "radiological health" position, for example, would be affiliated in some way (present or past) with companies or institutions that use radioactive materials. To avoid such association between the radioactive materials user industry and Board membership would require a change in Chapter 111H.

2.3BB: **Board should be restructured to allow enforcement, along with a link to the profit motive.**
Response: The Board has enforcement powers in relation to facility operation, waste acceptance, and other provisions of Chapter 111H.

2.3CC: **Board members should not be replaced if their terms end after the public hearings but before a decision is made on siting. New members who did not have the opportunity to participate in the hearings should not be allowed to vote.**
Response: The decision to reappoint or replace a Board member whose term has expired is made by the Governor. No appointment may occur unless three nominations have been submitted by organizations with statewide membership in the particular professional field of the Board vacancy.

2.3DD: **There is a shortage of women on the Board.**
Response: Opinion noted. See response to comment 2.3FF.

2.3EE: **There is a shortage of representatives from western MA on the Board.**
Response: Opinion noted. See response to comment 2.3FF.

2.3FF: **The Board is short-sighted in having no one from Plymouth as a member.**
Response: Opinion noted. Seven of the nine Management Board members are chosen by the Governor from individuals whose experience, background, and professional training indicates that they can act in the public interest. These members must have experience in engineering, radiological health, business management, public administration, and environmental protection. Three nominations must be submitted for each Board position chosen by the Governor, by statewide organizations who have demonstrated an interest in the professional areas mentioned above. The selection criteria considers the factors mentioned, not an individual's gender or home (or work) location.

2.3GG: **There should be a geologist on the Board.**
Response: Opinion noted. There is no specific Management Board position designed for a geologist.

(5) Conflict of interest

Background:

The Management Board, like many other state and regional compact entities around the nation, is comprised of individuals appointed for their expertise in a variety of fields. State law requires seven of the nine Board members to be appointed by the Governor from lists of candidates "whose experience, background and professional training indicates that they can act in the public interest." [emphasis added] The experience categories include: public administration, engineering, radiological health, business management, and environmental protection.

State law also allows individuals to serve in policy-making positions as long as they meet the requirements of the state ethics law, M.G.L. c.268A. That law sets various standards of conduct, depending upon the nature of an appointee's financial relationships. The fact that some members of the Management Board are employed by companies or universities that use radioactive materials is not prohibited by Chapter 111H, and is not unusual among LLRW management boards, authorities, and commissions nationwide.

2.3HH: **The Board is doing a good job with the public, but there is an appearance of conflict with some Board members. The Board should come up with a way to settle the controversy. Charles Killian should not have to defend himself.**
Response: The Management Board has always been concerned about the issue of conflict of interest. As such, all members, both past and present, who were concerned that a conflict may exist, requested opinions from the State Ethics Commission. Board members prefer to place the review of financial conflict questions in the hands of the state agency responsible for enforcing the state ethics law. The Board abides by the Commission's decisions.

2.3II: **It is illegal for any person with a conflict of interest to serve on the Management Board. Potential conflicts should be identified. (+1)**
Response: Any Board member who feels s/he may have a conflict may seek an opinion of the State Ethics Commission. The state ethics law contains provisions for waivers, under certain limited circumstances.

2.3JJ: **The fervor of several Board members for research and other uses of radionuclides presents a conflict of interest apart from any financial conflicts. (+1)**
Response: Opinion noted.

2.3KK: **The majority (five) members of the Management Board have a vested interest in the nuclear industry. (+6)**
Response: Four of the nine Board members work (or have worked) for companies or institutions that use radioactive materials. These Board members are charged to bring their professional expertise in business management, engineering, and radiological health to Board discussions and policy decisions, not the opinions of the companies or institutions where they work or have worked.

2.3LL: **The draft documents and the public hearings are all just a sham when you put industry people in charge.**
Response: Board members are appointed to represent the public interest, not their employers. They strive to represent the public, bringing their professional expertise to the Board's decision-making process. Many of their decisions have been opposed by the nuclear industry. Furthermore, Board members with present or past affiliations to the radioactive materials user industry do not make up a majority of the Board.

2.3MM: **Board members with financial ties to institutions producing radioactive wastes should resign or be removed from voting positions, because, regardless of good intentions, Massachusetts law rightly forbids even the appearance of conflicts of interest. (+3,321)**
Response: The background and experience of Board members with affiliations to radioactive materials users – who act in the public interest and are not in violation of state ethics law – can be beneficial to the development of LLRW management policy on behalf of all citizens of the Commonwealth. Users of radioactive materials are part of the "public."

The Governor's actions regarding the seven state appointees on the Board are entirely within the law. The use of the "determination" that an appointee can act in the public interest, despite an affiliation with a company or institution that has a financial interest, is a time-honored action, utilized by all past governors to ensure that a variety of viewpoints are represented on state boards. Under state law, apparent conflicts of interest can be remedied by merely disclosing the facts involved.

2.3NN: **It is unreasonable and impossible for Board members affiliated with radioactive materials industry to make fair and responsible decisions affecting public health and the environment. (+11)**

Response: Board members who have no affiliations with the nuclear industry have expressed the sentiment that those members with such affiliations can and do act in the public interest – reasonably, thoughtfully, and knowledgeably.

2.3OO: **Several people I know are so disgusted with the conflicts of interest on the Management Board that they have given up, and won't bother to come to your briefing sessions. We don't see an intent to make decisions that are truly in the public interest. You will see the results later, if you go through with the siting process – because the Board lacks credibility, there will be stiff opposition.**

Response: See response to comment 2.3FF.

2.3PP: **Maybe Board members should be paid salaries, so they have no other stake in the siting process.**

Response: See response to comment 2.3FF.

2.3QQ: **The conflict-of-interest issue must be cleared up or else the whole process will bog down.**

Response: See response to comment 2.3FF.

2.3RR: **Attorney General Harshbarger should investigate the conflict-of-interest charges. (+2)**

Response: The Attorney General has deferred the question of conflict of interest to the state agency that investigates such charges, the State Ethics Commission.

2.3SS: **Conflict of interest matters should be reviewed in greater detail. It is especially inappropriate for the Board members who have contracts with LLRW generators. (+10)**

Response: See response to comment 2.3FF.

2.3TT: **I strongly oppose Mr. Masse sitting on the Board. To have a member like Mr. Masse is not just a political move; that's like, "In your face, public." (+2)**

Response: See response to comment 2.3FF.

2.3UU: **Frank Masse has always acted in a professional manner, and will be fair and impartial in representing the Secretary of Health and Human Services on the Board.**

Response: See response to comment 2.3FF.

2.3VV: **Retired and actively employed persons from businesses and institutions that generate LLRW should provide the Management Board with the benefit of their technical knowledge from the vantage point of a technical advisory committee, rather than as members of the Board. If the siting process goes forward, an involuntarily designated community will, justifiably, use the existing but presently excused conflicts of interest to tie up the process well into the 21st century.**

Response: Technical experts from the nuclear industry occasionally advise Board staff on issues relating to LLRW management.

2.3WW: **No one serving on the Board, or five years previous to or subsequent to serving on the Board, should work for a generator.**

Response: See response to comment 2.3FF.

2.3XX: **Each appointee to the Board should receive a letter saying there are no strings attached to the way they vote.**

Response: Each appointee does receive instructions to exercise his/her best judgment on behalf of the public interest.

2.3YY: **Make available any information regarding contributions to Governor Weld's election campaign from corporations that generate LLRW.**

Response: Under MA law, corporations are prohibited from making contributions to the campaign for Governor. All donations that are required to be made public are available through the Office of Campaign and Political Finance.

2.3ZZ: **The Governor and some Board members are in violation of state conflict-of-interest law.**

Response: See responses to comments 2.3FF and 2.3LL.

2.3AAA: **Board's management decisions should be based on the evidence, not the Governor's preference. (+1)**

Response: Every Board member is committed to making decisions based on the evidence.

2.3BBB: **People distrust government because it is too often in the pocket of industry. It forgets the ordinary person.**

Response: Opinion noted.

2.3CCC: **Any Board member who helped develop the policy Carol Amick reported to the Southeast Compact Commission and the NRC Advisory Committee on Nuclear Waste (ACNW) should resign.**

Response: Opinion noted. The Management Board supports the policy presented by its executive director to the Southeast Compact Commission and the NRC ACNW. That policy is that the Commonwealth is pursuing two simultaneous paths in planning for LLRW management. One path requires the Board to negotiate with other states and regional compacts to gain an agreement for the disposal of Massachusetts LLRW in out-of-state sites. The other route provides the planning and regulations necessary if the Board initiates facility siting within the Commonwealth.

2.3DDD: **Because Executive Director Amick was on the Committee on Natural Resources and Agriculture when the Legislature created the Board, she may have a conflict of interest.**
Response: The legal propriety of Ms. Amick's serving as executive director of the Board was thoroughly reviewed prior to her appointment. In particular, the issue raised by this comment was addressed in detail. Nothing in the law prevents Ms. Amick from serving as executive director and having chaired the Legislature's Natural Resources Committee and the Special Commission that originally proposed enactment of Chapter 111H back in January, 1986.

2.3EEE: **Carol Amick should resign.**
Response: Opinion noted.

[NOTE: The conflict-of-interest issue also applies to public participation, but the above comments and responses are not repeated under Chapter 5 in this report.]

(6) Board mission

2.3FFF: **LLRW management is an important component of overall management of radioactive materials use.**
Response: So noted.

2.3GGG: **Board must identify and enlist elected officials to lobby state and federal governments to accomplish a satisfactory out-of-state disposal solution, to make LLRW a federal responsibility, to reclassify waste on the basis of its toxicity and longevity (NE Coalition petition), and to determine the outcome of NRC's ERROR (Enhanced Rulemaking on Residual Radioactivity).**
Response: Each of these issues has been subject to Board discussion and review.

2.3HHH: **Management Board's prime consideration should be to protect "Mother Earth." (+1)**
Response: The Board's primary consideration, in managing LLRW, is to protect the public health, safety, and the environment, as is so stated in Chapter 111H, section 12.

2.3III: **If NELRAD has been critical, it is because MA law and policy no longer reflect reality in the U.S. today, but generators still have to pretend and play the game.**
Response: Opinion noted. Some members of NELRAD support the Board's efforts regarding LLRW management.

2.3JJJ: **I and other citizens will hold you, the Board, accountable for whatever happens. (+1)**
Response: The Board is accountable to the public, as the lead state government entity charged with LLRW management.

2.3KKK: **Present NRC and state regulations should be scrapped. Consider an interim management program, storing LLRW at Pilgrim and Yankee Rowe.**
Response: An interim storage facility is one consideration that will be deliberated by the Board following the adoption of the Management Plan. No location has been offered, or considered, for such an interim solution. The Board would need its regulations to be in place, not discarded, in order to proceed with any interim solution. Such an option is one of several, and has not been selected by the Board.

2.3LLL: **Tell the Governor the problem he gave you to solve is bigger than he thought, and that truth demands a more comprehensive solution. You'll be heroes to us all.**
Response: The task was assigned by the Legislature, in response to Congressional mandate, not by the Governor.

2.3MMM: **Board should push for waste reclassification. (+3)**
Response: The Board is charged with establishing a waste classification system for all LLRW generated, treated, or disposed of in MA, which is based primarily on its radiological toxicity and radioactive half-life and also on the principal radionuclides present in the waste and their concentrations; its specific radioactivity; its chemical and biological toxicity and form; its chemical reactivity; its volume, and such other characteristics as the Board determines are necessary to decide which classes of LLRW may be stored for decay, which classes of LLRW will require disposal, and which will require special management procedures to facilitate the safe and timely closure, post-closure observation and maintenance, and institutional control of a facility accepting the LLRW.

All of the characteristics that have been proposed for amendments to the NRC classification system are incorporated already in the MA classification system. Therefore, a change in the federal NRC system would have virtually no effect in MA. However, the Massachusetts classification system does not ignore current federal classification, and may have to be revised if the NRC system were changed.

2.3NNN: **The prime interest of the Board ought to be ensuring the health and welfare of citizens, not the material concerns of the generators. (+3)**

Response: Opinion noted. See response to comment 2.3AA.

2.3OOO: **The purpose should be to regulate certain activities, not to give way to the regulated industry. Government usually gives way – that's why we have such messes.**
Response: Opinion noted.

2.3PPP: **The Board must make a rational, risk-based decision which will ensure the safe and efficient management of LLRW and mixed waste.**
Response: Opinion noted.

2.3QQQ: **The Management Plan should more adequately discuss the benefits of using processes that generate LLRW, such as medical treatment, medical research, industrial applications, and electricity generation in order to help citizens understand the importance of what is at stake regarding this issue.**
Response: Chapter 4 of VOLUME II includes extensive information about the uses of radioactive materials that generate LLRW. References to the many types of radioactive materials users exist throughout the Plan, and in the Board's annual Survey Report, which identifies all companies and institutions that generate LLRW, as well as their products and services.

2.3RRR: **Board should be a clearinghouse for ideas on substitutes for radioactive materials.**
Response: The Board has offered an analogous recommendation to DPH on this subject. One of the three basic program elements of the Management Board's recommendations to DPH on LLRW source and volume minimization and elimination is for an "information exchange." The goal of such a program is to ensure that all potential radioactive sources and LLRW can be considered for minimization and storage for decay, and technical information on process changes can be made available to radioactive materials users. The Board recommends that groups of radioactive materials users and LLRW generators assist in analyzing production processes that generate waste, and identifying possible minimization techniques.

In addition, the Board has recommended that another element of its source/waste volume minimization program be "educational outreach." This program includes a resource center on source and volume minimization, to be located at the offices of the Management Board or DPH.

(7) Board actions (general)

2.3SSS: **Commend Board and its executive director for maintaining access to Barnwell. Will support actions to extend the contract beyond June, 1994. (+3)**
Response: Opinion noted.

2.3TTT: **Board should recommend release of proposed EPA regulations. (+2)**
Discussion:
The Board has discussed the issue of the pending EPA draft radiation standards regulations, and awaits their official release so that it may comment. In addition, through its participation in the national LLW Forum, the Board has pressed for action from EPA.

2.3UUU: **Board should recommend (or pay for) a radiation monitor in every town. (+1)**
Response: Were the Management Board to establish such a policy, it would lack the resources for implementation. Legislation before the Massachusetts Legislature this year proposes that the state provide such a monitor in every community.

2.3VVV: **We should require generators to post a bond for the 16-million-year care of LLRW when they apply for a license to use radioactive materials.**
Response: There are no current requirements by the NRC for licensees to post any such bond that might cover the costs of disposal throughout the decaying life of the radionuclide. There are, however, requirements that certain applicants submit a plan for financing their decommissioning activities. This requirement applies to any radioactive materials user seeking a license to possess and use unsealed byproduct material that has a half-life greater than 120 days, and in quantities exceeding 100,000 times the limits set by the NRC in Appendix C of 10 CFR Part 20; any radioactive materials user to be licensed to possess and use quantities of source material greater than 100 millicuries; any application to operate a nuclear-powered utility plant; any user seeking to possess and use unsealed special nuclear material in quantities exceeding 100,000 times the limits in Appendix C; and any license application for the independent storage of spent nuclear fuel and HLW at an independent spent fuel storage installation or a monitored retrievable storage facility.

The "16-million-year" care recommended perhaps refers to the 16-million-year half life of Iodine-129, used in extremely small quantities in MA. The Appendix C limit for I-129 is one microcurie; therefore any licensee seeking to possess 0.1 curie would be obligated to ensure funding for its decommissioning activities.

For purposes of protecting the Commonwealth during the operation and institutional control of a disposal facility, funds are required by Chapter 111H to be set aside to cover institutional control costs and potential liability costs.

The Management Board is charged with the responsibility of annually determining the amount of revenues, to be raised from surcharges on the use of the facility, that will be deposited into these accounts. Furthermore, Chapter 111H prevents the Commonwealth from "walking away from" a disposal site at the end of the institutional control period, if long-lived radionuclides are present above those levels allowed to be released to air or water by federal and state law.

2.3WWW: **It is unfair that I have to pay a higher fee to the Board based on the fee you charge our supplier, as well as a fee for a service I will never use. We do not ship LLRW.**
Response: Opinion noted.

2.3XXX: **Stop any form of pollution.**
Response: Opinion noted.

2.3YYY: **Establish a strong coordinating agency to coordinate and mediate potential disputes between three responsible state agencies, between operator and communities, etc.**
Response: The Management Board is established as the lead LLRW management agency in state government. As the main state entity, it is appropriate for the Board to fulfill the mediating role with other state agencies, any site operator, and any site community.

2.3ZZZ: **Where state programs overlap with federal, duplicative requirements should be eliminated.**
Response: The major duplication identified in the Management Plan is in the area of mixed waste regulation and management. The Board has recommended steps to eliminate the duplication on the state level, and is working through a national organization of state LLRW agency managers to press the NRC and EPA for resolution of their duplication problems.

2.3AAAA: **Request Attorney General issue an advisory opinion on Appendix Sec. 3-1 to 3-9 of the Nuclear Power and Waste Disposal Voter Approval and Legislative Certification Act, M.G.L. c.164. (+1)**
Response: Such a request was made to the Attorney General, not by the Board but by individual citizens. The Attorney General's office responded that the criteria it uses to determine whether an advisory opinion would be appropriate does not include issuing such opinions on matters of constitutionality of a state statute.

2.3BBBB: **Board should publicly reject and correct certain statements made by Carol Amick to the NRC Advisory Committee on Nuclear Waste and to the SE Compact Commission. (+1)**
Response: The Board's counsel reviewed the accusations made against its executive director in connection with her presentation before the NRC's Advisory Committee on Nuclear Waste and, using the transcript of the Committee meeting, identified the erroneous nature of all accusations.

2.3CCCC: **Board should support the Chapter 503 referendum. (+2)**
Response: The Management Plan presents the Board's position on Chapter 503. The Board acknowledges that this referendum law, adopted in 1982, is hailed by some as a critical step in the Massachusetts siting process, but is criticized by others as an unconstitutional procedure under the regulatory structure established by Chapter 111H. While the Massachusetts Supreme Judicial Court issued an advisory opinion in 1986 that raises legal questions about the constitutionality of portions of Chapter 503, the Board has not sought any judicial ruling on the law's applicability, as it does not have legal standing to do so. Unless it is overturned by the courts, Chapter 503 will remain on the books.

2.3DDDD: **Board should provide comprehensive documentation that storage, treatment, and disposal technologies are safe and effective. (+3)**
Response: The draft LLRW Management Plan, in VOLUME II, Chapters 11, 12, and 13, provides a comprehensive review of these issues.

(8) Postpone any action

2.3EEEE: **Board should postpone its plans because a new Congress and new federal Administration are being asked to revise federal LLRW management law; MA should not set a policy based on federal laws that may be outdated and improved soon. (+5)**
Response: If federal law or regulation is changed, the Management Board will comply as necessary.

2.3FFFF: **Board should postpone its schedule because the need for multiple sites in the U.S. is decreasing. (+1)**
Response: Board activities are intended to ensure that MA fulfills its responsibilities under federal law, and retains access to the Barnwell disposal site as long as possible.

2.3GGGG: **Board should postpone its schedule because LLRW minimization regulations are inadequate and must provide clear waste reduction goals and enforcement of reduction plans. (+1)**
Response: The Board seriously considered the public comments recommending improvements to the DPH minimization regulations, and prepared a list of recommendations which the Board feels strengthens those rules.

2.3HHHH: **Board should postpone its schedule until Governor Weld conducts a full investigation of charges of conflict of interest among Board members. (+2)**
Response: Conflict-of-interest issues are addressed by the State Ethics Commission. See response to comment 2.3AA.

2.3IIII: **Board should postpone its schedule because the PPAC met for the first time only last month [January] and has not been able to carry out its advisory activities. (+1)**
Response: The PPAC meets at least twice a year, and as needed to advise and assist the Board's Public Participation Coordinator on various LLRW-related issues. PPAC members provide useful advice on Management Plan-related issues.

2.3JJJJ: **Board should postpone its schedule because LLRW classification system is a deception and needs revision before siting occurs. (+1)**
Response: See response to comment 2.3MMM.

2.3KKKK: **Board should postpone its schedule until Massachusetts adopts a separate and distinct program for managing waste from small generators. (+2)**
Response: The Board is charged with managing waste generated by all radioactive materials users, big and small. The LLRW is indistinguishable by category of waste that produced it.

2.3LLLL: **Board should postpone its schedule until Massachusetts includes the statewide referendum, M.G.L. c.164 append. 3-1 to 3-9, in the site selection process. (+2)**
Response: The statewide ballot vote required by M.G.L. c.164, appendix 1-3 to 3-9 (also known as Chapter 503), is referenced in numerous parts of the Management Plan, and, like many other laws related to facility siting, must be followed unless stricken down by the courts.

2.3MMMM: **Wait and see; other states will probably want our waste. (+1)**
Response: This point is identified as "non-siting option #1 in the Management Plan (VOLUME II, Chapter 15), which is among the options the Board will consider after the Plan's adoption.

2.3NNNN: **State must act to provide a long-term LLRW management solution in time-efficient manner, adhering to current timetable. (+1)**
Response: Opinion noted.

2.3OOOO: **Board should not make critical decisions until all the evidence is in.**
Response: Opinion noted. The process by which the Management Board developed its LLRW Management Plan and related regulations has been under way since late 1989, and has involved extensive discussion and evaluation of critical policy issues by the Board and the public. While the Board acknowledges that some issues will resurface in the future, due to new information, it also recognizes its role to responsibly manage LLRW in the Commonwealth.

2.3PPPP: **Board should postpone adoption of siting regulations, and cancel plans for siting vote, until citizens' questions are answered and citizens can comment on regulations, (+2)**
Response: The Management Board did just that, in response to public comments. The Board extended its public comment period on the draft LLRW Management Plan and draft regulations to mid-July, 1993. The comment period lasted six months, which the Board felt was sufficient time to review the draft documents. As a result of this extension, the Board received comments from approximately 3,500 Massachusetts citizens.

2.3QQQQ: **The tentative schedule for Board action should be abandoned.**
Response: The schedule that appears in VOLUME I of the draft Management Plan was altered by the Board, in response to public requests for more time to review the draft documents of the Board, DEP, and DPH. The timetable will be revised in the final Plan.

(9) Procedural requirements of Chapter 111H

2.3RRRR: **Board should be commended for the effort that went into the Management Plan – an important milestone for the Commonwealth. (+2)**
Response: Opinion noted.

2.3SSSS: **Believe the Chapter 111H process is a good one.**
Response: Chapter 111H has provided a process for extensive public comment on the many LLRW-related documents, and the opportunity for public participation in all aspects of LLRW management.

2.3TTTT: **Chapter 111H contains extensive and potentially over-burdensome requirements re: siting and management of an LLRW disposal facility. Such requirements, if too stringent, may cause potential facility operators to refuse to come to MA. The LLRW siting regulations should be reviewed to benefit from failures of M.G.L. c.21D.**
Response: Companies that operate LLRW facilities have not indicated an unwillingness to consider the MA LLRW management system, as required by Chapter 111H. Both that statute, and the accompanying draft regulations, were

evaluated from the perspective of hazardous waste facility siting (M.G.L. 21D) failures, so that mistakes would not be repeated.

2.3UUUU: **Because three state agencies plus the site community are involved in siting and licensing, the siting process will be difficult and complicated.**
Response: There is no doubt that the MA siting process, if initiated, is complex. The law was deliberately drafted in that fashion to ensure public participation, no opportunity for waivers of important criteria, and to explain with great specificity the roles and responsibilities of each involved and affected agency, community, homeowner, and citizen.

2.3VVVV: **I like fact that no waivers of siting process are allowed by the Board.**
Response: Opinion noted.

2.3WWWW: **I like the four-season analysis of tentative sites.**
Response: Opinion noted.

2.3XXXX: **I am concerned that the only appeal on a final siting decision is to DEP, and that the Supreme Court would only review the DEP decision. Feel there should be a de novo trial.**
Response: The appeal of a siting decision begins with an adjudicatory proceeding before the DEP Commissioner. Anyone aggrieved by the Commissioner's decision may seek judicial review in the Supreme Judicial Court, a decision made by the framers of Chapter 111H to reduce appeal costs and delays from one court to another. Unless Chapter 111H is modified, there would be no de novo trial. All siting-related issues would be expected to be raised in a trial-like adjudicatory proceeding.

2.3YYYY: **Decay to "acceptable limits" should not be enough to allow an end to the institutional control period. There should be firm, specific criteria, because background radiation can vary.**
Response: Chapter 111H contains a specific requirement for the length of the institutional control period. It mandates that the "institutional control period shall not be less than the minimum time required for any low-level radioactive waste present at the site to decay to the maximum concentrations above natural background levels permitted to be released into air or water In unrestricted areas under federal and state law.." [section 46] The requirement pertains to "natural background," as determined by baseline studies prior to the facility's operation, not "background."

2.3ZZZZ: **The Management Board should select the disposal methodology, not the site community.**
Response: Chapter 111H assigns this important responsibility to the site community, so that it may select the type of facility most suited for the site and the community, and which best ensures safe facility operation and protects public health, safety and the environment. The Management Board, however, certifies the potential facility operators who have met the Board's operator selection criteria regulations. Any potential operator who proposes more than one type of facility technology would receive a separate certification for each technology. This procedure will enable the Board to pre-screen proposed technology to ensure that the highest environmental protection standards will be met.

2.3AAAAA: **You must have full retrievability at a facility so that future improvements in LLRW management can allow for modifications.**
Response: Chapter 111H mandates that any disposal method employed at a facility "shall permit retrieval...." [section 16]

2.3BBBBB: **No matter how detailed and extensive your Management Plan, common sense will still be needed in its administration.**
Response: Opinion noted.

2.3CCCCC: **Determine areas in which state regulations should be the same as federal regulations and areas in which they can be better. (+1)**
Response: See response to comment 2.3K.

2.3DDDDD: **Board should be more aggressive in publicizing public meetings; including coverage on local cable stations. (+1)**
Response: The Management Board staff has tried to be aggressive in its efforts to encourage media coverage of Board activities, including local cable television stations. The media has frequently displayed a disinterest in the Board's work, or the issue of LLRW management, because no vote has yet been taken to initiate facility siting within the Commonwealth. However, the Board understands this commenter's expression of frustration over the lack of media attention, and is striving to force more coverage, even if it means purchasing advertisements rather than depending upon the news columns and news broadcasts.

2.3EEEEE: **Board should keep all tapes of its meetings and have transcripts made, and each individual member's vote should be recorded during deliberations on possible revisions to the draft documents and on facility siting.**
Response: The Board's minutes are the official record of its meetings; tapes are made only to assist in minutes preparation, and are not retained. Transcripts of all public hearings and "briefing sessions" held to receive public comments on the draft Plan and regulations are being retained for the record. Chapter 111H requires a roll call vote on facility siting and other activities of the Board. "Consensus" decisions regarding policies in the Management Plan

are reached through discussion; roll call votes are not taken, but differing opinions are noted in the minutes if a harmonious position does not result.

2.3FFFFF: **The Management Board needs to reduce LLRW management regulations.**
Response: The Board's draft Management Plan implementing regulations are significantly shorter than originally proposed, in an effort for simplicity. LLRW management policy is complicated, however, due to the specificity contained in Chapter 111H.

2.3GGGGG: **The requirement of a two-thirds vote to site means six Board members, not seven.**
Response: The comment is correct.

2.3HHHHH: **Before adopting the drafts, the Board should clarify Chapter 111H in regard to when each CEO will be notified.**
Response: If the Board votes to begin facility siting, it must notify every municipal CEO of that action, explain in detail the site selection criteria, guidelines for their application, and procedures for implementation of site selection, and offer the resources of the Board and the public participation coordinator to assist communities in participating in the site selection process. Perhaps this requirement is not clearly described in the Plan.

2.3IIIII: **Provision should be included for prior or immediate notification of off-site radionuclide releases at a facility. Such notification should include a full description of the specific radionuclides released, their amount in curies, potential exposure pathways, half-life, specific activity, type of radiation, and daughter products.**
Response: This comment is conceptually required by Chapter 111H. Provisions for environmental monitoring are contained in the statute and in the draft DPH licensing regulations. Section M.31 describes the requirements for both the "Department Environmental Monitoring Program" and the "Operator Environmental Monitoring Program" required for facility licensing, development, operation, closure, and institutional control. One of the goals of the environmental monitoring programs is to "provide early warning of the magnitude and extent of any migration of radionuclides and/or any hazardous chemicals...."

The DPH regulations also require the annual issuance of a report describing and evaluating the findings of the environmental monitoring program. The Board will recommend to DPH that it provide for prior or immediate notification of radionuclide releases, to ensure that the regulations cover both on-site and off-site releases, and the subjects suggested by the commenter.

2.3JJJJJ: **The Plan and regulations pertaining to LLRW facilities should be rewritten to more clearly define the difference between a state-sponsored LLRW disposal facility and the licensed use, handling, and storage of radioactive materials and waste at licensed companies and institutions. A reorganization of the waste regulations themselves will then be necessary to make clear what governs the repository, and what governs the individual radioactive materials users.**
Response: Opinion noted. See response to comment 2.3F.

2.3KKKKK: **If an in-state disposal site is ever built, make sure the criteria for the waste it accepts are permanent.**
Response: If an in-state disposal facility is every built, Chapter 111H, section 38(b), provides that the facility operator must annually submit proposed criteria for waste acceptance for the Management Board's approval, modification, or rejection, following a public hearing. The criteria must be "consistent" with the Management Plan and adequate to assure proper and efficient facility operation, source and volume minimization and storage for decay (in compliance with DPH regulations), and conservation of resources. The law requires that the waste acceptance criteria must also specify "that no LLRW shall be accepted from an electric-power-generating facility if such waste requires management more stringent than the most stringent management required for any LLRW which may be accepted at the facility from another generator."

The purpose of this annual review and approval is to enable the Board to evaluate waste acceptance policies and procedures, and to make modifications in waste acceptance criteria, as technological advances in waste treatment, storage, or disposal methods emerge. The annual review by the public, through the public hearing process, also gives citizens greater opportunity for input to the waste acceptance criteria policy.

2.3LLLLL: **The 36-step process for siting a facility, should a decision on siting be made affirmatively, strikes us as excessive. If a decision is made to site, streamlining the siting process in Chapter 111H would be necessary.**
Response: The siting of an LLRW disposal facility is a complicated and lengthy process. The Management Board stresses if siting is initiated in the Commonwealth, it should not be rushed, but should proceed in a scrupulously methodical way, so that all stakeholders are aware of each siting step and have opportunities to review and comment. Many of the steps identified in the Disposal Facility Performance Plan would occur simultaneously; many are intended to ensure that any "superior" site chosen will support all requirements for facility licensure, and will withstand potential legal challenges.

(10) Out-of-state solution

2.3MMMMM: **Board should work harder pursuing an out-of-state solution, and should not consider facility siting until all opportunities for negotiation have been exhausted.** (+11)

Response: In 1990, the Management Board declared that identifying an out-of-state disposal solution was a priority over its other role of planning for in-state facility siting, if necessary. The Board continues to believe that opportunities exist for negotiations with other states and compact regions, but its efforts to join an existing compact have been hampered by various state and compact laws prohibiting waste importation. The Board will likely continue to pursue more than one long-term strategy for LLRW management, with one of them continuing to be discussions and negotiations with other sited and nearly sited regions.

2.3NNNNN: **Because I believe politics will prevent Massachusetts from building an LLRW facility, I feel that the Commonwealth should not go through the motions of pretending to site such a facility.**
Response: If the Management Board determines that in-state siting is necessary, its siting activities will not be fabricated, and citizens throughout the Commonwealth will be encouraged to participate.

2.3OOOOO: **MA should speak with all states that have potential sites. Negotiations should be conducted on a state-by-state basis. The Governor and his immediate staff should be involved in the negotiations.**
Response: MA has met with and spoken repeatedly to every potential sited state, and every compact region that currently operates a disposal site. The Governor has designated his Secretary of the Executive Office of Environmental Affairs -- a member of the Management Board, as his lead Cabinet official to address LLRW disposal.

(11) In-state siting

2.3PPPPP: **Board should begin the siting process immediately.**
Response: Chapter 111H contains several procedural steps that must be completed in order to begin a siting process. An important procedure is the "determination of need" that storage, treatment, or disposal capacity is necessary for the present or is anticipated to be required within the next decade. In addition, the final LLRW Management Plan containing the determination of need and various sets of LLRW-related regulations must be adopted by the agencies that issued their draft versions in January, 1993. Those activities are anticipated to be completed by December, 1993. The Board anticipates conducting a siting vote in February, 1994.

2.3QQQQQ: **Board should reject all regulations and vote "no" to the siting process.**
Response: The Board intends to modify its regulations based on its consideration of public comments received and a review of its Management Plan policies. A decision to site a facility within the Commonwealth will be made on the basis of each member's evaluation of the most appropriate short- and long-range LLRW management solutions, with its primary consideration the protection of public health, safety, and the environment.

2.3RRRRR: **The Board should not choose a site until production of LLRW has been stopped. Then, deal with the waste that's left.**
Response: The Management Board has discussed both "non-siting" and "siting" options to address disposal capacity needs. All options identified by the Board are described in Chapter 15 of VOLUME II. The option pertaining to a cessation of the use of all radioactive materials that would generate LLRW requiring disposal in a licensed disposal facility poses a number of legal problems for the state. While the Board does not appear to have the statutory authority to stop LLRW generation, an argument could be made that DPH (if MA becomes an Agreement State) could potentially impose restrictions pertaining to source and volume minimization and on-site storage, which effectively could stop the generation of LLRW.

Such an option could, perhaps, be implemented in the manner described above. However, the legal ramifications would be enormous, and the outcome uncertain, with lawsuits against the Commonwealth filed by existing LLRW generators. Injunctions and normal delays in the litigation process would allow LLRW to continue to be produced.

In addition, this option does not resolve the problem of managing and disposing of LLRW already generated, and of handling LLRW which would result from the decommissioning of facilities halting their use of radioactive materials.

2.3SSSSS: **The Board has already decided to site in Western MA; decisions have already been made, and the public hearings are merely a "rubber stamp." (+2)**
Response: No decision has been made by the Board, or any other entity of the Commonwealth, regarding in-state siting or site locations. If siting is initiated, the Chapter 111H process requires the entire state to be screened to determine locations of potential site suitability, and to disqualify areas that are unacceptable for environmental reasons.

2.3TTTTT: **Continued statements from the Board indicating that MA is unwilling to site a disposal facility could cause out-of-state sites like Barnwell to exclude MA prematurely.**
Response: The Management Board has indicated publicly and privately to potential host states and compact regions nationwide that the Commonwealth is currently following two parallel tracks: discussions with other states/regions for an out-of-state disposal solution and preparations for in-state facility siting, if necessary. Officials of other states are well aware of the provisions of MA law and the Board's policies, which established the parallel-track approach.

2.3UUUUU: **The big 4 generators do not want to spend the high out-of-state access fees; they want an in-state disposal facility subsidized by the taxpayers. (+1)**

Response: Some of the large-volume LLRW generators in MA have expressed opposition to in-state facility siting, believing it would be more expensive for them than an out-of-state solution. Other large generators recognize that the costs of in-state versus out-of-state solutions are affected by numerous factors, some of which cannot be controlled. Depending upon the nature of an out-of-state agreement, they realize that it could be less, or more, expensive than siting within the state. Therefore, the large generators have not expressed a unified preference for in-state disposal. Their preference is to solve the LLRW disposal problem in the most economical manner possible. The cost-effectiveness of facility siting is only one element in the Board's decision-making that must, by law, be considered, however.

2.3VVVVV: **State should find a site as close as possible to the generators, and should use an already-polluted parcel.**

Response: The Management Board has proposed to establish a program to encourage communities to volunteer potential sites. If the Board proceeds with facility siting, it will work with citizens, organizations, municipal officials, and others to finalize the details of its volunteer program, and have it commence. A parcel of land that is already polluted could be volunteered, or could also be identified through the statewide environmental screening process. Any such land would need to meet the DEP environmental siting criteria. In addition, a potential site would be required to meet the challenges of a year-long detailed site characterization, and to ensure that any existing pollution would not mask potential future releases.

2.3WWWWW: **A report on radiation health effects should be made annually to surrounding communities. (+1)**

Response: The Board will recommend to DPH that its annual report of environmental monitoring data include information on health effects related to a facility operation.

2.3XXXXX: **Unless a superior site is under consideration, and a feasibility analysis under way at this time, the Board should not conditionally move forward to Phase II of Chapter 111H.**

Response: A "superior site" is not identified through the Chapter 111H process until the end of Phase II. The Board's decision regarding the initiation of siting will not be dependent upon the knowledge of a site; that information will develop at a later date in the process.

2.3YYYYY: **One does not already have the dollar figure in mind, and a bill ready to go to the Legislature, unless one has already decided to site in MA.**

Response: The Board is following the course of action required by law before any siting decision is made. The Management Board recommended that a bill to cover the costs of facility siting, as well as to pay an "entry fee" into an out-of-state disposal facility – if such an arrangement can be negotiated – be filed by the Governor and approved by the Legislature. Action on such a measure enhances the Commonwealth's credibility in negotiating with other states, and makes funds available immediately, if the Board initiates siting.

2.3ZZZZZ: **Carol Amick told the NRC Advisory Committee that the site will probably be in western MA. That bothers me.**

Response: Ms. Amick's comment referred to the fact that an early draft of the DEP siting criteria, at the time of her meeting with ACNW, was written in such a way that favored sites in western Massachusetts. She, Management Board members, and other Board staff members had been working on behalf of the Board to modify the DEP draft, so that no particular part of the state was favored. Those changes were subsequently incorporated into the DEP draft regulations before their issuance for public review and comment.

2.3AAAAAA: **Carol Amick's statement to the NRC Advisory Committee and to the SE Compact Commission could possibly violate federal law.**

Response: This allegation was referred to the Board's General Counsel when originally received by the Board. His report to the Board found no basis for the allegation of illegal activity. The report is a public record, and a copy is available upon request.

(12) Other

2.3BBBBBB: **The state cannot justify subsidizing companies that generate LLRW without determining an overriding social benefit. Such benefit is not easily found in the case of Nuclear Metals, Inc. NMI's waste disposal costs should not be subsidized in any way. Furthermore, the Board should join the call for a ban on depleted uranium ammunition, in accordance with international treaties. (+1)**

Response: The Commonwealth does not subsidize LLRW generators any more than it subsidizes hazardous or solid waste producers. The Board is charged with managing LLRW, and implementing policies that ensure the disposal of LLRW in a manner that protects the public health, safety, and the environment. Users of radioactive materials are assessed a fee to fund the Management Board's operations. Remaining Board costs for the most part have come from federal surcharges on LLRW generators, which are rebated to the Commonwealth.

2.3CCCCCC: **The Board should obtain all plausible and workable answers needed to expedite the cleanup of the NMI facility in Concord, then go to the state government, federal government, military, and environment-minded Vice President Gore for resolution.**

Response: The Management Board is monitoring the efforts of DEP and the NRC to push for the cleanup of the basin behind Nuclear Metals' facility, which contains depleted uranium and other materials. The Management Plan describes the details of this cleanup.

2.3DDDDDD: **Board should take more steps with the NRC over the problems at Interstate Nuclear Services. The NRC must be pushed to do its job.**
Response: Because of citizen complaints over INS, the Management Board urged the NRC to conduct a health, safety, and environmental evaluation of that facility. The Board will continue to monitor the NRC's actions (and later the DPH if MA becomes an Agreement State), to ensure the existence of required inspections and enforcement.

2.3EEEEEE: **It's not clear what the state's enforcement authority is.**
Response: State LLRW management law divides various areas of enforcement among several agencies. The DPH is the key regulatory agency if MA becomes an Agreement State, whereby the regulatory authority over radioactive materials users and storage, treatment, and disposal facilities is transferred from the NRC to the DPH (except for the regulation of nuclear powered utility plants). The Management Board has some enforcement responsibility, as does DEP.

2.3FFFFFF: **There must be a higher motive than profit.**
Response: Chapter 111H requires the Management Plan to address the economics of LLRW management. It does not, however, require the Board or other state agencies to establish and implement LLRW-related policy to the financial benefit of the users of radioactive materials.

2.3GGGGGG: **Science will come up with a solution that is best for the environment.**
Response: Scientific solutions to LLRW management are undoubtedly on their way, although the Board must address its responsibilities in a period of time that likely will not allow for major scientific changes in the manner in which LLRW is generated, managed or disposed of.

2.3HHHHHH: **The delay in the availability of Board meeting minutes does not look good. I am giving you the benefit of the doubt, but you've got to avoid the appearance of any coverup -- the appearance that you are hiding something. The downside potential is enormous.**
Response: Staff vacancies at the Management Board's office caused the earlier delay in preparation of Board meeting minutes. This problem has been resolved, and minutes of each previous meeting are generally approved at the next Board meeting.

2.3IIIIII: **Government's fear of hurting industry often ends up hurting industry more in the long run.**
Response: Opinion noted.

2.3JJJJJJ: **Regulations are just words on paper. Enforcement is where government usually fails. (DPH) (DEP)**
Response: Opinion noted. State law relating to LLRW management helps to ensure success, not failure, due to the participation of the public at every step of LLRW management.

2.3KKKKKK: **The Plan lists "other relevant state laws" in Chapter 2, under which the Commonwealth might assert some authority to regulate decommissioning sites, but does not indicate what impact would result at sites undergoing remediation under NRC or EPA supervision, if MA is granted Agreement State status, or exactly what roles the Board, DPH, and DEP would play in regard to these federal agencies.**
Response: The list of "other relevant state laws" is merely a list; other chapters of the Plan identify impacts of the various laws listed. For example, one law mentioned is M.G.L. c.21C, which gives DEP authority to regulate toxic chemical "hazardous" waste, including "mixed" waste. The list references the chapters of the Plan (Chapter 8 for mixed waste discussion), that the reader can review for detailed discussions.

If and when Massachusetts is accepted into the Agreement State program, all licensees, including those involved in decommissioning activities (with the exception of the nuclear power plants), would be subject to Agreement State regulations. Even without Agreement State authority, however, MA has responsibilities regarding the decommissioning of certain sites; these will be clarified in the revision of the decommissioning chapter in VOLUME II.

2.4 The Local Role in LLRW Management

Background:

Local government involvement in LLRW management is required by Chapter 111H, and is primarily in the form of citizen and municipal government participation (i.e., public hearings, public comment, review of draft policies and regulations, consultations with state officials, etc.) rather than through the enforcement of municipal by-laws or ordinances, which are pre-empted by state and federal laws and regulations. If a decision is reached to site an LLRW facility, local participation is more expansive, and includes the involvement in the siting process by local Community Supervisory Committees (CSCs) and the selection of the facility operator and the facility technology by the CSC.

[NOTE: Comments here are grouped under six subtopics: local veto; Chapter 503; neighboring and affected communities; negotiations; local role in siting process; and other.]

Public comments:

(1) Local veto

2.4A: **Towns should have veto power in the site selection process. (+12)**
Response: There is no local veto authorized in Chapter 111H. A statewide voter approval law allows citizens of a site community to express their opinion on siting, but their view can be outvoted by the rest of the state.

2.4B: **Abutting communities should have veto power in site selection process.**
Response: See response to comment 2.4A. When Chapter 111H was framed, abutting and neighboring communities were not extended as much authority in the siting process as the site community.

2.4C: **Local communities should not have veto power because then only the poorest towns would be sited.**
Response: See response to comment 2.4A.

2.4D: **Public should be allowed to vote for site approval in two elections – in the Legislature and in the site community.**
Response: The statewide voter approval referendum law, M.G.L. c.164, Appendix 3-1 to 3-9 – which is commonly called Chapter 503 – directs the Legislature to certify that an LLRW site is the "superior" site for Massachusetts. That law, however, does not allow a similar vote by the citizens of the site community. No such local voter approval or denial provision is contained in MA law.

(2) Chapter 503

Background:

Chapter 503, a 1982 referendum law, requires statewide voter approval for any storage, incineration, or disposal facility sited in Massachusetts which is not solely for the storage, incineration, or disposal of LLRW produced from medical or bio-research applications. The law also requires statewide voter approval for "any compact or agreement with any other state or states concerning the disposal or storage of low-level radioactive wastes within the Commonwealth..."

An advisory opinion issued in June, 1986, by the Massachusetts Supreme Judicial Court (SJC) indicated that the legislative certification and voter approval provisions of Chapter 503 pertaining to the siting of an LLRW facility might not be constitutionally incorporated into the regulatory structure established by Chapter 111H. Some attorneys suggest that the Legislature's action in enacting Chapter 111H, after the Court's opinion was issued, raises questions about the applicability of Chapter 503. Chapter 503 remains on the state's law books, but is expected to be challenged if the Board initiates facility siting.

2.4E: **"Chapter 503," the Nuclear Power and Waste Disposal Voter Approval and Legislative Certification Act that was adopted by referendum in 1982:**
(a) Should be determined to be constitutional (or not) prior to facility siting.
(b) Should be included as a regular step in the Management Plan and the site selection process, not just mentioned in a footnote about the Massachusetts Supreme Court advisory opinion on the constitutionality of some of the Act's provisions. (+3)
(c) Should be listed in any Performance Plans (VOL. I) pertaining to siting a storage, treatment, or disposal facility.
Response: A determination of the constitutionality of Chapter 503 would enable the Management Board, as well as the citizens of the Commonwealth, to understand prior to the selection of any superior site, whether the requirements of Chapter 503 would be part of any siting process. However, the Management Board does not currently have "standing" to bring an action in court.

In addition, including references to Chapter 503 without the accompanying footnote about the SJC advisory opinion (b, above) might encourage citizens to participate more fully in the Management Board's activities, believing that the Chapter 503 provisions will protect their interests if siting ever is initiated. Likewise, removing the references to the SJC advisory opinion could mislead the public into believing that Chapter 503 has no legal impediments.

While additional references to Chapter 503 (and other applicable state and federal laws) in the Performance Plans may enable readers to better understand the process involving facility siting, all applicable laws are not referenced here, but are listed in the chapter which details the provisions of Chapter 503 (VOLUME II, Chapter 5). In addition, the Management Plan references Chapter 503 in numerous sections. Any "Performance Plans" for storage or disposal should include all steps in siting which pertain to Chapter 111H; the applicability of all other state and federal statutes can be automatically assumed.

2.4F: **Eastern MA can outvote western MA, but if you pollute western MA, the whole state will be polluted.**
Response: The provisions of Chapter 111H relating to siting, facility development, operation, closure, post-closure operation and maintenance, and institutional control, attempt to preclude any pollution from an LLRW facility, and

provide systems (monitoring, retrieval, etc.) to ensure that any release of radioactivity cannot escape from engineered barriers.

2.4G: **The regulations to implement the Management Plan do not include a reference to the statewide referendum, implying that the referendum will be ignored or challenged.**
Response: The regulations to implement the Management Plan pertain only to requirements of Chapter 111H, not to other state laws that relate to LLRW management. The Management Board does not have statutory authority to interpret other laws through the adoption of implementing regulations.

(3) Neighboring and affected communities

2.4H: **Community involvement should be expanded. The responsibility should include the county, with significant up-front money to hire independent experts. (+2)**
Response: While Chapter 111H does not reference county government participation in site selection, it could be anticipated that interested and affected county government officials would be encouraged to take part. Formal participation in the siting process is given to "site," "affected," and "neighboring" communities. The Management Board believes that the statutorily required participation of interested communities and citizens, as well as the voluntary participation of other interested groups and individuals, obviates any need to modify Chapter 111H. However, if the Board initiates siting, it will work actively to encourage public participation.

2.4I: **Towns neighboring a sited town should have more standing, more say. (+1)**
Response: See responses to comments 2.4A and 2.4B.

2.4J: **The Definition of "neighboring community" should be modified to include:**
(a) all municipalities abutting a site community, and/or
(b) all municipalities containing land within a 10-mile radius of a facility (+1), and/or
(c) a change in or removal of the 20-percent rule, which does not make sense in rural areas (+1).
Response: The definition of "neighboring community" comes directly from Chapter 111H: "Neighboring community, a community, other than a site community, which, according to the most recent decennial census ..., has at least 20 percent of its population residing within three miles of any superior site."

The framers of Chapter 111H discussed the relationship between the location of a facility site and surrounding communities. Testimony was received from citizens impacted by various siting proposals that the effects on neighboring communities could vary significantly, with population density identified as one key determining factor. This concern was the basis for the current "neighboring community" definition.

The Management Board has evaluated the "neighboring community" definition along with the definition of "affected community" (i.e., "a community, other than a site community, which is identified in an environmental impact report... and can be expected to experience significant impacts as a result of the location, development, operation, closure, post-closure observation and maintenance, and institutional control of a facility") and the definition of "site community." The Board believes these three groups of impacted communities, taken together, ensure that the communities truly impacted by a facility site have the greatest say in the process. In addition, if the Board initiates siting and a superior site is named, the Board will encourage participation at Community Supervisory Committee meetings and other meetings by the residents of all surrounding communities.

2.4K: **The amounts of grants to affected communities, provisions for transportation routes, emergency planning, water supply protection, and public participation in the affected communities should all be spelled out in the Management Plan. (+1)**
Response: These provisions for compensation or impact payments compensation are referenced in Chapter 111H generally, but are not specified, on the belief that the involved communities would prefer to negotiate on the issues they felt were most important. Other compensation is explicitly identified in Chapter 111H, and is detailed in VOLUME II, Chapter 16.

2.4L: **The selected site will be a regional "sacrifice area."**
Response: Opinion noted. If facility siting is initiated, a site ultimately chosen will provide an overall benefit to society, with potential costs and benefits to local communities. Chapter 111H seeks to ameliorate any local costs, by ensuring that the facility protects the environment, and is safe to workers and the nearby public. In addition, compensation and impact payments would provide an overall benefit to the local community (and the area), to offset the cost side of the cost-benefit equation.

(4) Negotiations

2.4M: **The sited community can't really negotiate because it has no leverage.**
Response: The site community has negotiation leverage prior to the selection of a facility operator, when the CSC can encourage offers among operators. All of the site community's negotiations with the operator must be included

in the "comprehensive operating contract." In addition, the site community has leverage with the state and the facility operator through discussions on the comprehensive operating contract.

2.4N: **Towns don't have the expertise to deal with the advanced technology involved.**
Response: Chapter 111H requires the Management Board to provide funds to the CSCs representing candidate and "superior" sites, to enable local citizens to hire whatever expertise is appropriate.

2.4O: **It is odd and patronizing that the site community is brought in for "consultation," but is not to be a party to the contract with the operator. This diminished status forces the community into a minoritarian, reactive role on matters in which it has a vital interest.**
Response: Because the facility is a "state" operation, the operating contract must be between the Commonwealth and the facility operator. The community's role as "third party beneficiary" gives it the right to enforce all provisions of the contract, an important responsibility.

(5) Local role in siting process

2.4P: **There should be more than two or three site community representatives added to the nine gubernatorial appointees on the Board.**
Response: Chapter 111H provides for an additional two Board members representing the site (and possibly the neighboring) communities. To change that number would require a change in Chapter 111H. However, the sitting Governor could, at his or her discretion, fill any Board vacancy with a qualified resident of a site community.

2.4Q: **At the expense of the license holder or the state, the local Board of Health should be allowed under Sec.M.31(1) of Part M to obtain its own samples for independent analysis. (DPH)**
Response: Section 36 of Chapter 111H, and sec. M.31 of the Part M draft regulations, provide that the local Board of Health "shall be entitled to obtain portions of the samples collected pursuant to the environmental monitoring program, for independent analysis." The cost of such analysis could be funded out of the technical assistance monies given by the state to the Community Supervisory Committee.

2.4R: **Affected communities should receive funds to implement a citizen's environmental monitoring program similar to those being established around Seabrook and Three Mile Island.**
Response: Chapter 111H, section 36, currently authorizes a "comprehensive environmental monitoring program" at the facility site, which "shall provide, to the maximum extent feasible, for the participation of officials and citizens of [the] site community and the training of such persons to facilitate their participation." The statute does not include a provision for an environmental monitoring program conducted by "affected communities." However, such a program could be established, if negotiated as part of the "comprehensive operating contract."

2.4S: **Site community has too much authority, i.e., in selecting facility technology and operator, and participating in negotiations regarding operator-funded compensation.**
Response: The framers of Chapter 111H felt these important responsibilities were appropriate to the site community.

2.4T: **Waiting until the end of the process for a community to choose a facility developer and technology may not gather the local support hoped for, and may waste the potential resources and increased educational opportunities that could result in identifying a developer and technology earlier in the process. A reluctant community, as opposed to a volunteer community, would likely make either no choice at all, choose the most inappropriate choice to enhance subsequent legal challenges, or choose the most expensive option.**
Response: The site community would not choose a facility developer and technology "at the end of the process." Potential operators are evaluated during the year-long detailed site characterization of candidate sites. Once a superior site Is selected, final operator and technology selection occurs. Because the Board certifies operator applicants, the site community would be picking only from a pre-screened group of appropriate technologies. The community would not have the option of selecting technologies that are unreasonably priced.

2.4U: **To reduce waste, make each community responsible for its own LLRW.**
Response: The states, not localities, are legally responsible for the management of LLRW. In addition, the economics of providing environmentally sound disposal require a state or multi-state approach.

2.4V: **Management Board should provide for independent evaluation of environmental studies, etc., for use by local governments.**
Response: If the Management Board initiates facility siting, Community Supervisory Committees (CSCs) are chosen by potential candidate site community chief elected officials to assist the Board in developing detailed site characterization plans for the candidate sites. Funds for CSC activities will be provided by the Management Board, and CSCs may retain such consultants or advisors as it determines is necessary to "represent the best interests of the site community in the environmental review of" facility siting activities. [Chapter 111H, section 21(c)(2)] In addition, section 23 of the Act provides that each CSC "shall be kept informed of the progress of the detailed site characterization; be furnished copies of all data, reports and memoranda pertaining to said detailed site characterization including raw data, draft reports and memoranda; and given reasonable opportunity to review and comment upon all work performed."

2.4W: **With money from the Board, the towns identified as potential hosts by the Candidate Site Identification Report should be the ones to hire the persons who will conduct the independent technical review of the report methodology. (DEP)**
Response: State law provides that upon issuance of the draft Candidate Site Identification Report, a Community Supervisory Committee (CSC) is established in each community identified in the report. The CSCs are given certain powers and duties, including representing the "best interests of the candidate site community in the site selection process," and receiving and expending "technical assistance and planning funds." If a Candidate Site CSC wished to retain an independent consultant to review the data utilized to develop the Candidate Site Identification Report, it could do so.

(6) Other

2.4X: **Local citizen-and-employee boards should make all decisions relative to health and safety at an LLRW facility.**
Response: Federal law does not permit the state to delegate these powers to local boards of citizens or employees. Regulatory authority over health and safety matters is the responsibility of the federal government (NRC) and the state (DPH). If MA becomes an Agreement State, regulatory authority will be assumed by DPH. State law provides extensive opportunities for public involvement in the development of policies relating to LLRW facilities, and the monitoring of their operations.

2.5 A Federal-State Partnership: the Agreement State Program

Public comments:

2.5A: **Page 2-16, footnote 13: Disagree that no waste minimization will occur if MA does not become an Agreement State. Waste minimization obviously has been occurring. MA LLRW generators have led the nation in reducing waste volumes, and have done so without the "benefit" of a regulatory requirement.**
Response: Waste minimization has occurred, and will continue to occur, through the efforts of LLRW generators themselves, especially due to the rising costs of LLRW storage, treatment, and disposal. The footnote is missing a phrase; it was meant to say that the NRC does not mandate minimization through its regulations, as does MA law and the proposed DPH regulations.

2.6 Recommendations on Agreement State Status

Public comments:

2.6A: **MA will need to become an Agreement State, with a state licensing program for radioactive materials users, in order to license a waste facility in the state.**
Response: Opinion noted.

2.6B: **MA does not need to be an Agreement State to site a disposal facility.**
Response: If the Management Board initiates disposal facility siting, and MA is not an Agreement State, such responsibilities as facility licensure, inspection, enforcement, etc., would be the obligation of the NRC.

2.6C: **The justification that Agreement State status is needed in the event a facility is sited in MA is weakened if a facility is not built here.**
Response: The Management Board considered the advantages and disadvantages the Agreement State program, and recommended in its draft Plan that the state should enter this program, principally due to cost savings to radioactive materials users, and the state's acquired authority over source and volume minimization. It is certainly true that if a facility is not sited in MA, the Board's preference to have the Commonwealth exert the regulatory control over licensing, inspections, monitoring, etc., rather than the NRC, is eliminated as an argument for Agreement State.

2.6D: **Support only Limited Agreement State status, because the NRC has a long, successful history with MA licensees, and the cost and inefficiency of recreating the state infrastructure for an already well-run program would be a mistake. In addition, most NRC limits still prevail in Agreement States; Massachusetts could not be more strict. (+5)**
Response: The Management Board believes a significant cost savings to radioactive materials users will occur under the Agreement State program. Licensees (not including nuclear-powered utilities) currently pay more than $2.5 million yearly to the NRC; estimates of the costs to staff a MA Agreement State program range from $500,000 to $800,000. These savings have been identified by other states, as well. For example, Pennsylvania licensees are presently paying a total of over $4.7 million in annual fees to the NRC; their Radiation Control Program has calculated that their Agreement State costs will be less than $900,000.

"Limited" Agreement State status would allow MA to regulate only a disposal facility. It would not provide the extra measure of regulatory protection which will be demanded by the public, once MA has no LLRW disposal available (due to the closure of the Barnwell, South Carolina site). LLRW requiring disposal will have to be stored at over 100 locations around the Commonwealth. "Full" Agreement State status would enable MA to have increased accessibility to the licenses, thus assuring MA citizens that on-site storage will be conducted in a manner most protective of public health and safety. In addition, the NRC does not have personnel to routinely monitor the on-site storage activities of every licensee, as a state-operated program could.

2.6E: **The conclusion in this section that "Agreement State status would give the Commonwealth the means to ensure that waste in storage all around the state, at several hundred licensed users' locations, will never cause a public health or environmental danger" is inaccurate, misleading, and alarmist. How does the fact that only 103 MA licensees shipped LLRW for disposal in 1991 translate into storage at "several hundred" locations? The only state where prolonged denial of access to disposal facilities has resulted in extensive on-site storage is Michigan, a non-agreement state. No resultant adverse health or environmental effects have been reported.**
Response: The reference in the Management Plan should be reworded for clarity, and also needs to be updated with 1992 survey data. The reference to "several hundred" locations referred to the 100 or so licensees that generate waste requiring disposal in a licensed disposal facility, and the 100 or so separate generators that only produce LLRW requiring on-site storage for decay. Adding together both groups, there would be more than 200 locations where LLRW was stored on-site in the Commonwealth.

2.6F: **If generators will save money under Agreement State status, it is important to keep the overall costs high by other means, to encourage waste reduction.**
Response: Costs of storage, treatment, transportation, insurance, and other costs related to radioactive materials use and LLRW management are expected to continue to serve as encouragements for source reduction and volume minimization.

2.6G: **The Management Plan assumes the approval of Agreement State status. The text should be reworded to provide for the possibility that said program may not be obtained.**
Response: Opinion noted.

2.6H: **The plan should make clear that sites which are being remediated or decommissioned are not subject to the proposed regulations since such sites are regulated under other federal and state laws.**
Response: No licenses would be subject to the Agreement State regulations until MA is accepted into the Agreement State program. If and when that occurs, all licensees, including those involved in decommissioning activities (with the exception of the nuclear power plants), would be subject to the Agreement State regulations.

Even without Agreement State authority, MA has responsibilities regarding the decommissioning of certain sites. For example, because of DPH's statutory authority to protect the public health, that agency has regulatory responsibility to ensure that sites being returned to "unrestricted use" meet an appropriate radiation level at their fence line. DEP is also frequently involved in decommissioning, due to the hazardous waste or mixed waste on these sites.

Were MA to become an Agreement State, DPH authority would increase to "within" the site boundary, as well, since it would assume NRC responsibility for decommissioning (except nuclear powered utility plants).

2.6I: **The suggestion of an inter-agency task force is a good one that should be implemented now in anticipation of Agreement State status.**
Response: Opinion noted.

2.6J: **The Management Board is under no statutory charge or obligation to comment on the merits or disadvantages of Agreement State status. It should refrain from doing so, and leave the question for the Governor to decide in consultation with his Advisory Council on Radiation Protection.**
Response: The Management Board does, indeed, have a statutory charge to comment on the advantages and disadvantages of Agreement State status. This statutory obligation results from the mandates in Chapter 111H assigned to the Board to "plan and effect the management of LLRW in the Commonwealth," to review and analyze the effectiveness and feasibility of a program for the minimization of the "volume, radioactivity, toxicity, or other characteristics of LLRW," and, overall, to guide LLRW management with the primary consideration of "protection of public health, safety, and the environment."

In administering these various responsibilities, the Board evaluated the strengths and weaknesses of the Agreement State program, and determined that such a program would be in the best interests of the public and radioactive materials users. The Board believes the Agreement State program will enable the Commonwealth to more adequately regulate licensees and any storage, treatment, or disposal facility that may be developed in the state; the program will significantly reduce present costs paid by licensees to the NRC each year; and it will enable the Commonwealth to aggressively press for source and waste volume minimization. See also the discussion of comment 2.6D.

2.6K: **It is not established under what authority the State would license the use, storage, distribution, and disposal of NARM, which is not an aspect of the Agreement State program approved by the NRC.**
Response: The state DPH has authority over NARM waste pursuant to section 5N of M.G.L. c.111. This is the same law that gave the DPH regulatory authority for radioactive materials subject to NRC regulation. Massachusetts is one of 28 states which have laws regulating NARM waste. States have passed these laws, because no federal law assigns responsibility for NARM to either the states or the federal government. However, the federal Resource, Conservation and Recovery Act (RCRA), which regulates hazardous waste, does not explicitly exclude NARM from EPA's authority,

as the law does with other types of radioactive material (except mixed waste, which is both hazardous and radioactive). Therefore, EPA could, if it chose to, regulate NARM waste. So far, it has not chosen to do so.

Chapter 3: Radiation Sources, Health Effects and Protection Standards

3.5 Radiation Health Effects

[NOTE: Public comments relating to this section are grouped here under eight subtopics -- no safe dose, risks versus benefits, health effects studies, health effects discussion, adverse health effects, monitoring, and other comments.]

Public Comments:

(1) No safe dose

3.5A: **It's important to remember there is no safe dose of radiation below which no risk exists. (+4)**
Response: The radiation health (health physics) profession and various standards and regulatory bodies assume, for purposes of establishing radiation protection practices and regulations, that there is no threshold limit below which radiation-induced health effects will not occur. Cellular damage is observable at low doses (10,000 millirem or less) and cell damage is likely from even one quantum of radiation (e.g., one beta particle, alpha particle, or gamma ray). However, cell damage does not necessarily mean that health effects will result. These standard-setting bodies acknowledge that health effects (as opposed to cell damage) cannot be directly observed or demonstrated at low doses and low-dose rates, and that zero risk at these low levels is possible. The levels at which LLRW facilities are regulated are considered to be in the "very low-dose" range (1-25 millirem). To be "safe," it is assumed that health effects may occur at even the smallest doses. The federal government estimates the total average dose from all sources to be 360 millirem per year, per person.

The current regulatory scheme for LLRW management, facility development, and radiation protection of the public is believed to be adequate, based on current knowledge and acknowledgement of scientific uncertainty regarding the health effects of ionizing radiation at very low doses (1-25 millirem), such that development of LLRW facilities can proceed if the Board votes to develop such facilities in the Commonwealth. The requirements of Chapter 111H, M.G.L. c.111 (Massachusetts radiation protection requirements), and the regulations of the Management Board, DPH, and DEP supplement the federal regulations to ensure additional protection of the public health. Nevertheless, the Management Board will actively monitor radiation health studies, and related science and technology, and will revise development plans and standards as required to reflect the latest information.

3.5B: **Radiation causes more cancers than state officials or generators admit.**
Response: The Management Board is taking a balanced point of view in reviewing the available data on the health effects of ionizing radiation, and is aware that substantial evidence exists that radiation at high doses and dose rates does, indeed, cause cancer. The evidence of the cancer risk associated with low-level, low-dose rate radiation is less clear, and particularly with respect to very-low-dose radiation at the regulated levels for LLRW disposal. However, the Board continues to gather and review data on the effects of low-dose radiation exposure.

3.5C: **Recent data indicate that alpha particles are 1,000 times more damaging to cellular tissue.**
Response: Because of their mass, alpha particles are potentially very damaging to biological tissue if inhaled or ingested. The biological effect of alpha particles is accounted for by assigning weighting factors relative to other types of ionizing radiation. This allows a biological effect to be estimated on a uniform basis with other types of radiation.

3.5D: **There is nothing low about LLRW except its name; it contains long-lived and high-level radioactive materials. It is highly dangerous, is a known carcinogen, is as hazardous as HLW, and its effects are cumulative. (+5)**
Response: Ionizing radiation, from any source, is known to be a carcinogen at high doses, and the potential of this effect cannot be excluded at very low doses (doses within the normal variations of background radiation). Regulatory conservatism resulted in the adoption of a model that assumes carcinogenic effects will occur at these very low doses.

LLRW can contain all of the radionuclides that are contained in HLW as well as many others. The principal difference between LLRW and HLW is that LLRW is restricted by regulation to contain substantially smaller concentrations and quantities of some radionuclides (in particular, long-lived and especially hazardous ones). This limitation on quantity and concentration implies significantly different long-term management issues and potential hazards for LLRW relative to HLW.

3.5E: **Radioactivity does not go away, and poisons whatever it is in proximity to. (+2)**
Response: Opinion noted. Most of the radionuclides in LLRW, unlike some non-radioactive hazardous materials, decay to insignificant or unmeasurable levels in relatively short periods of time. Most radioactivity cannot "poison" things in close proximity to the source of the radioactivity, but can act as a carcinogen or otherwise impact health if ingested or inhaled in sufficient quantities.

Some radioactive sources can be a threat to human health by virtue of their proximity to humans. These materials (some of which are found in LLRW) generally emit gamma radiation. These sources of radiation can be isolated from humans by the use of distance and radiation shielding materials. They are also generally short-lived relative to a disposal facility's containment system design life.

3.5F: **I don't know how anyone could live with deciding how many people will die or have birth defects.**
Response: Opinion noted.

3.5G: **Page 3-11: The sentence, "Scientists disagree about whether, or not, very small doses of radiation can damage living cells" should be rephrased as follows: "Scientists disagree about whether or not very small doses of radiation can significantly damage living cells."**
Response: The Board agrees that the statement should be reworded. There is general agreement that radiation, even very small doses, can damage living cells, but the ultimate health impact of that damage is not as well understood or universally accepted. The Management Plan will be revised to reflect this distinction.

3.5H: **I recommend the book Inconclusive By Design, published in 1992 by the National Toxics Campaign, about cancer studies.**
Response: This book, about the federal government and hazardous chemical waste, is now in the Board's office.

(2) Risks vs. benefits

3.5I: **Focus on the benefits from medical advances due to the use of radioactive materials in research, etc.**
Response: The Board recognizes that radioactive materials are put to many productive uses in research, medicine, consumer products, safety devices, electric power production, and other commercial and industrial applications. The Management Plan does include mention of these uses. However, since the Board's function is primarily the management of LLRW, the Board believes it was appropriate to focus on issues more directly related to this topic.

3.5J: **We were never consulted as to whether the benefits of radioactive materials use outweigh the dangers.**
Response: The role of the Management Board is not to make a judgment regarding the benefits of radioactive materials use, but to provide for the safe, environmentally sound management of LLRW. The draft Management Plan was distributed to allow public input, and 17 public hearings and public meetings were held to gather comments. Through this effort, the Board was able to receive "consultation" from anyone interested in the subject.

3.5K: **I wonder if we have really saved lives with radioactive materials, or if we have lost them.**
Response: Opinion noted.

3.5L: **If we were more caring and compassionate in our medical system, the healing process would be furthered, possibly better than if we're more technological and radioactive in our medical system.**
Response: Opinion noted.

3.5M: **The medical profession and the manufacturers of radiopharmaceuticals made us believe this technology is essential to our well-being. I think it is possibly not.**
Response: Opinion noted. Whether or not the use of radioactive materials in the medical industry is considered "essential," a large body of information indicates that their use is pervasive and has produced substantial benefits, for example, advances in medicine from life-science research. Regardless of one's opinion on this issue, LLRW is being produced in the Commonwealth by many organizations, and the Management Board's responsibility is to manage it safely, no matter what the source.

3.5N: **The benefits of radioactive materials use are minuscule compared to the dangers, particularly when it comes to the long-lived radionuclides. (+1)**
Response: Opinion noted. The Management Board recognizes the potential benefits and dangers of radioactive materials use. The Board's primary mission is to ensure the safe management of LLRW, which is likely to be produced for the foreseeable future. The Board believes that the policies provided in Massachusetts law, Chapter 111H, which include requirements for monitoring LLRW in an in-state disposal facility (if such a facility is built), and retrieving the waste if problems arise, will ensure the safe management of LLRW. However, the Board continually seeks public comment and the public's participation in its activities – another important way to ensure safe management.

3.5O: **There are benefits from the medical use of radioactive materials, but I'm not convinced about the benefits of nuclear power.**
Response: Opinion noted. Also, see response to 3.5N.

3.5P: **The overall perspective on radiation risks taken by the authors of the Plan was bureaucratic and regulatory, which will make many community members very nervous.**
Response: Opinion noted. A bureaucracy exists to ensure ample opportunities to provide for management and control, and to allow the public to have input into the process. The purpose of a regulatory program for LLRW management is to provide guidelines for action.

3.5Q: **The "magic" of science is too often revealed to be more dangerous than originally thought.**
Response: Opinion noted.

(3) Health effects studies

3.5R: **A study by Dr. Steven Wing of workers at the Lawrence Livermore lab shows that cancer rates were elevated with as little as 125 millirem of exposure.**
Response: In the Board's consideration of the health effects issue, the work of Dr. Wing has been reviewed. Dr. Wing was a panelist at the special seminar on radiation health effects in Worcester November 3, 1993.

3.5S: **Some sort of study should be done for every cancer found but not cured. What's the exposure level of the community to radiation?**
Response: In overall studies of health effects, studies have been conducted on background radiation, which were also considered by the Management Board in its review of the health effects literature. Numerous studies are under way regarding cancer. There are specific proposals before the Massachusetts Legislature which consider the evaluation of community exposure and cancers in particular regions of the state.

3.5T: **Board should recommend or pay for epidemiological studies (+1)**
Response: Opinion noted. Also, see response to comment 13.8AA.

3.5U: **Generators should pay for health studies in sited community before facility is constructed and every 5 years thereafter.**
Response: See response to comment 13.8AA.

3.5V: **Discussion of health risks should cite positive and negative peer review findings. Focusing on the MA DPH study alone was totally inadequate. Low-dose studies of medical irradiation and nuclear workers are much more credible examples of positive findings from low-dose exposures. To cite a Boston Edison critique of the Plymouth study in a one-page discussion of the low-dose controversy is imprudently biased. To indirectly support the Boston Edison critique with the findings of the National Cancer Institute (NCI) Study of Nuclear Facilities further displays your industry bias. Any responsible researcher knows the deep deficiencies of the NCI Study. This whole section should have been much more responsible and objectively written.**
Response: Opinion noted. The current regulatory scheme for LLRW management, facility development, and radiation protection of the public is believed to be adequate, based on current knowledge and acknowledgement of scientific uncertainty regarding the health effects of ionizing radiation at very low doses (1-25 millirem), such that development of LLRW facilities can proceed if the Board votes to develop such facilities in the Commonwealth. The requirements of Chapter 111H, M.G.L. c.111 (Massachusetts radiation protection requirements), and the regulations of the Management Board, DPH, and DEP supplement the federal regulations to ensure additional protection of the public health. The Management Board will actively monitor radiation health studies, and related science and technology, and will revise development plans and standards as required to reflect the latest information.

3.5W: **On pages 3-11 and 3-12, delete the last two paragraphs at the bottom of p. 3-11, and the first paragraph at the top of p. 3-12. It is inappropriate to specifically mention a study which has been contradicted twice in separate scientific studies and peer reviews.**
Response: See response to comment 3.5V.

3.5X: **Page 3-13: Footnote 5, which notes that various studies have brought contradictory conclusions, should be deleted or revised to include discussion on the subsequent peer review findings which question both the results and conclusions derived by the researchers.**
Response: See response to comment 3.5V. In addition, the wording of footnote #5 will be reviewed in the process of revising the Plan.

3.5Y: **This chapter is also deficient in enumerating the real concerns of communities exposed to radioactive contamination and the epidemiological studies that validate their concerns. The chapter downplays the uncertainties in the A-Bomb Survivor Study which, from a community's perspective, is deeply troubling.**
Response: Opinion noted. Also, see response to 3.5V.

3.5Z: **Risk assessment is fraud disguised as science. It is really a political process for pre-meditated murder. I urge the Board not to play this game. (+2)**
Response: Opinion noted.

3.5AA: **Board members should become aware of the field of risk assessment.**
Response: The Board and its staff are aware of the risk assessment discipline and that many regulations, such as the LLRW regulations, are based on risk assessment methodology. The Board continues to gather and evaluate relevant data on risk assessment methodology and the assumptions used in risk estimates, particularly with respect to the potential risks to human health from the management of LLRW.

(4) Health effects discussion

3.5BB: **I want a round-table discussion on radiation health effects.**
Response: The Management Board sponsored a seminar on the health effects of low-level ionizing radiation on November 3, 1993. A videotape of the seminar is available, and can be loaned to interested parties.

3.5CC: **Host a debate between John Gofman and whoever NMI or Boston Edison wants to send.**
Response: See response to 3.5BB. Also, John Gofman was invited but was not available for a seminar in the October - November time frame set by the Board. Boston Edison did not recommend a participant for the seminar panel.

3.5DD: **If the Board wants public support, we should hear more about the health effects of the contaminants, in detail, from experts. (+3)**
Response: See response to comment 3.5BB.

(5) Adverse health effects

3.5EE: **Many of us are going to get sick for no reason except to make somebody wealthy. I worry about my relatives and myself getting cancer or radiation sickness from an LLRW disposal facility. I also worry about the birth defects and other sickness such a facility could cause. People living in and adjacent to areas containing nuclear power plants, nuclear fuel processing plants, HLW dumps or military nuclear storage facilities already have their genetic health at risk. Start thinking about the health disaster you are potentially leaving your children and mine.(+13)**
Response: Opinions noted. The Management Board has not decided if a facility should be built in Massachusetts. After sponsoring a seminar on the health effects of low-dose radiation and looking at the literature on the subject, the Board has come to the belief that a properly sited, designed, and operated LLRW disposal facility would not impose unusual health risks on any community. The Board's goal is to minimize risk.

3.5FF: **The history of our technology and research with radioactive materials in MA will uphold the safety considerations for a new facility.**
Response: Opinion noted.

3.5GG: **I believe I contracted cancer by living in a housing development where low-level radioactive waste had been dumped.**
Response: Opinion noted. The Management Board's mission is to develop responsible management of LLRW, so that no illegal LLRW disposal will occur. The Board encourages anyone who believes he or she has been exposed unwillingly to radioactive materials to seek assistance from DPH.

3.5HH: **The three of the nine U.S. census districts with the highest civilian reactor emissions also have the highest breast cancer mortality rate. The districts with the lowest civilian reactor emissions have the lowest breast cancer mortality rate.**
Response: Opinion noted. See response to comment 3.5A.

3.5II: **People in Plymouth are already getting leukemia from Pilgrim Station, and they are at higher risk for other radiation-induced ailments.**
Response: Opinion noted. There are differing opinions from different health studies regarding the leukemia rate in Plymouth, which affects risk evaluation, as well.

3.5JJ: **Off-site testing samples and a full environmental assessment are needed before NMI's pit is decommissioned.**
Response: This issue is not directly under the jurisdiction of the Management Board, although the Board supports a full cleanup. The Board has urged the NRC and DEP to take expeditious action, and the MA Attorney General's office is also evaluating this matter.

3.5KK: **Twenty years from now we may discover more severe costs of the Gulf War – cancers caused by NMI's depleted uranium bullets.**
Response: Opinion noted.

3.5LL: **Cancers in my neighborhood could have been caused by emissions from Interstate Nuclear Services.**
Response: Opinion noted.

3.5MM: **We need a good study of the effects of low-dose radiation in Franklin County. The Board could get that moving by writing a letter to DPH or pledging some funds from its own budget. Generators could be asked to fund it as well. Please use your influence. There are birth defects and other health problems. Once properly examined, the statistics could affect the emissions allowed from an LLRW facility.**
Response: There are bills pending before the Massachusetts Legislature that would, if passed, bring about such a study.

(6) Monitoring

3.5NN: **I am concerned about the continued production of radioactive waste because government is covering up a relationship between HIV and low-level radiation. Various studies show that radiation affects the immune system.**
Response: Opinion noted.

3.5OO: **Require that affected communities be able to educate themselves on appropriate health protection mechanisms so that they may choose to have disease surveillance programs, independent environmental monitoring, baseline studies, etc.**
Response: The Massachusetts law governing management of LLRW (Chapter 111H) requires that DPH establish an environmental monitoring program for the facility after consultation with the Board of Health of each site community. The monitoring program "shall provide, to the maximum extent feasible, for the participation of officials and citizens of each site community and the training of such persons to facilitate their participation." The Board of Health of each site community shall also be entitled to obtain portions of environmental samples for independent analysis by an EPA-certified laboratory.

DPH is also evaluating the efficacy of establishing baseline health studies for site communities.

(7) Other comments

3.5PP: **Page 3-13, Paragraph 2: The sentence, "Somatic radiation effects strike various body organs and tissue to different degrees" should be rephrased as follows: "The somatic effects of radiation apply to various body organs and tissue to different degrees."**
Response: The statement will be reworded as recommended.

3.5QQ: **Page 3-14, full paragraph 1: The phrase "(1/E = 1/12.3 years +/12 days where E is the effective half-life, ...") should be deleted, as it is the incorrect use of the formula.**
Response: The quantitative example will be deleted, as recommended.

3.5RR: **Page 3-16, paragraph 5 should be revised to reflect the latest mandated implementation date of January 1, 1994.**
Response: The Management Plan will be revised to reflect the correct date of January 1, 1994, for implementation of Part 20.

3.5SS: **Page 3-11: The last sentence at the bottom of the page appears to be erroneous in that the statement: "...occupational exposure caused the increased cancers" could not be found in the referenced document.**
Response: The statement will be revised to accurately reflect the results of the study.

3.5TT: **Page 3-16: The subsection entitled "Occupational Radiation Dose Limits" should be retitled "Revised Occupational Radiation Dose Limits."**
Response: The change will be made as recommended.

3.5UU: **The risks for radiation and for hazardous chemicals should not be different. The NRC estimates there will be one fatal cancer in 285 for 100-millirem exposure, while the EPA estimates one fatal cancer in a million people for other toxins.**
Response: Different philosophies have developed from different segments of the regulatory community and the research community. The Management Board believes that for very-low-dose radiation exposures (1-25 millirem) that may occur at an LLRW facility of the type allowed under MA law, the effect on the surrounding area would be negligible, no greater than background. The Board does not believe it is appropriate to project cancer incidence based on the risk coefficients used to derive the fatal cancer estimates suggested in the comment, since the mathematical model containing these coefficients, which was used in the evaluations of standards adopted in Title 10 of the Code of Federal Regulations, Part 61, relates to shallow land burial of LLRW. Shallow land burial is illegal in MA.

The federal regulations limit releases from an LLRW disposal facility to 25 millirem per year to a "critical receptor" (i.e., a hypothetical individual who receives the highest exposure of 25 millirem to the whole body). This limit is not a general population dose limit. Extrapolating this "worst case" dose to the areas around an LLRW facility, the Board believes that if 25 millirem of exposure occurred at the facility boundary, then perhaps a few dozen individuals can receive an exposure of 5-10 millirem. However, for the general population around such a facility, the exposure would be less, such as one millirem. The Board therefore believes that the estimate of a cancer fatality among the few individuals who could potentially be exposed to such very low doses, based on the risk coefficients used by the NRC or recommended by the National Council on Radiation Protection and Measurements (NCRP), would result in a very small fraction of a single fatality.

The Board acknowledges the scientific uncertainty regarding the health effects of ionizing radiation at very low doses (1-25 millirem), but believes the current regulatory scheme is adequate, such that the development of LLRW facilities can proceed, if needed. The requirements of Chapter 111H and c.111 (MA radiation protection statute), as well as the regulations of the Management Board, DPH, and DEP, supplement federal regulations to ensure additional protection of the public health. The Board will actively monitor radiation health studies, and related science and technology, and will revise development plans and standards as required to reflect the latest information.

3.5VV: **Pages 3-14 and 3-15: The paragraph which starts with "Figure 3-F shows the toxicity comparisons of a metric ton of various types of waste calculated on this basis..." and the paragraph subsequent to it, should be eliminated. It appears that the combining of forms is in error by discussing LLRW and the decay of U-238, which is not really LLRW in this context, in relation to long-term toxicity. Figure 3-F should be edited or eliminated, as the comparisons may not be totally appropriate. The Board should review this study carefully before subscribing to the results by presenting them out of**

context. There are some apparent inconsistencies in the Figure 3-F results, especially in the long-term trends portrayed for "U Tailings" and "Low Level Radwaste."
Response: It is not apparent, as the comment indicates, that Figure 3-F and the text are inappropriate. The material was provided to be illustrative, particularly with respect to viewing LLRW in context with other wastes. The Board believes that the material in the Management Plan should be retained, but will revise the text to more clearly qualify the illustrative nature of the comparisons.

3.5WW: **Nuclear stuff is scary. (+1)**
Response: Opinion noted.

3.6 Radiation Protection Standards

Public Comments:

3.6A: **The Management Plan should include health criteria. (+1)**
Response: The current regulatory scheme for LLRW management, facility development, and radiation protection of the public is believed to be adequate, based on current knowledge and acknowledgement of scientific uncertainty regarding the health effects of ionizing radiation at very low doses (1-25 millirem), such that development of LLRW facilities can proceed if the Board votes to develop such facilities in the Commonwealth. The requirements of Chapter 111H, M.G.L. c.111 (Massachusetts radiation protection requirements), and the regulations of the Management Board, DPH, and DEP supplement the federal regulations to ensure additional protection of the public health. The Management Board will actively monitor radiation health studies, and related science and technology, and will revise development plans and standards as required to reflect the latest information.

3.6B: **Establish consistent health-based standards governing waste management and disposal for all radioactive waste, and make them consistent with general radiation standards.**
Response: See response to comment 3.6A.

3.6C: **Current standards are too low; every decade we have to revise the standards concerning the damage of radiation exposure. (+3)**
Response: See response to comment 3.6A.

3.6D: **"ALARA" has never been exposed to public scrutiny and debate. By whose judgment do we determine "reasonable"? MA should lead the way in an honest and thorough education of the public on this issue.**
Response: The Management Board, as required by Chapter 111H, is responsible for providing educational materials and information to the public on the subject of LLRW and related management technologies. As part of that program, the Board will provide additional information on the ALARA principle and how it impacts management of LLRW and public health.

3.6E: **The EPA's 10-millirem standard is preferable to the NRC's 25-millirem standard.**
Response: The 10-millirem EPA standard applies just to air emissions received by a "real" person, whereas the NRC 25-millirem standard relates to all-pathway exposure to a "theoretical" person. The EPA's 10-millirem limit applies to releases to the air from an LLRW facility. The EPA allows its standard to be exceeded, whereas the NRC limits for LLRW disposal are absolute "ceiling" limits that must not be surmounted, and in fact are to remain lower. The NRC limits apply to the maximally exposed individual, and the general population would not be exposed to these limits, based on the NRC performance objectives.

In addition to the 10-millirem air emissions limit, additional doses from other pathways are allowed by the EPA standards. The EPA restricts doses to a member of the public from all sources in the uranium fuel cycle to 25 millirem per year. The NRC considered the latter EPA standard in establishing the Part 61 requirement of a maximum of 25 millirem per year for LLRW disposal facilities.

3.6F: **A more proactive public health stand and use of standards set by the International Commission on Radiological Protection (ICRP) for general reference should be adopted.**
Response: Opinion noted. See response to comment 3.6A.

3.6G: **Adherence to the standards set by the NCRP is not comforting to MA communities, particularly as ICRP standards call for 1.5 rem a year to nuclear workers, and so, much less for public exposures (150 mrem). Considering the weight of community concerns in MA regarding exposures from nuclear power plants already suffered by the public, the state should adopt a more pro-active public health stand and use the ICRP standards for general reference, but allow public participation bodies to recommend and negotiate final standards for public exposures.**
Response: Opinion noted. The Management Board believes the NCRP standards to be more restrictive than those of the ICRP, with regard to occupational dose standards.

3.6H: **Unfortunately, many members of the ICRP have a conflict of interest, i.e., they promote nuclear power and weapons production instead of radiation safety and health.**

Response: Opinion noted. It is not surprising that the knowledge and experience on most subjects, including the nuclear and radiation health effects sciences, resides with the individuals who make those subjects their life work.

3.6I: **The only acceptable discharge from a facility is zero discharge.**
Response: The draft DPH regulations for licensing and operating an LLRW disposal facility contain a zero-release design objective which requires that "any disposal facility shall have its engineered structures designed with the goal to totally hold their waste content for the period of the hazardous life of the radioactive waste (zero release design objective)."

3.6J: **You are proposing too many bureaucratic rules and precautions for waste that poses such a small hazard.**
Response: Opinion noted.

3.6K: **I have full confidence that the Board fully understands all the safety applications.**
Response: Opinion noted.

Chapter 4: Characterizing LLRW Generated in Massachusetts

4.2 Massachusetts LLRW Types and Sources

[NOTE: Comments for this section are grouped under four subtopics -- general comments, medical/research generators, commercial generators, and nuclear power generators.]

Public Comments:

(1) General comments

4.2A: **Generators don't care about health risks, only profits.**
Response: Opinion noted. Most private institutions operate under a number of constraints and with several goals and motives. Certainly, one of the principal goals of a commercial enterprise is to make a profit, which is not to say that the organization does not also embrace other goals, such as worker and public health and safety. In addition, many licensees who generate LLRW are non-profit institutions.

4.2B: **Board should not trust the answers it gets on the survey forms as to who is generating what kind of waste. Nobody checks on them, so they can get away with fibs.**
Response: Since the Management Board is not the licensing authority for radioactive materials users, the Board does not attempt to validate every entry on the survey forms by means of rigorous on-site audits of the licensees. However, the NRC periodically reviews licensee records. In addition, the Board is able to cross-check the composite activity and volume values of waste that is shipped for disposal by comparing the survey quantities with data reported by the disposal sites. Any large discrepancies are researched by the Board and the cause identified. Also, the data is validated through comparisons with: historical data for a particular licensee; data from similar licensees; expected quantities from the particular class of licensee; and radioactive materials users' NRC materials licenses. The survey form requires that a senior operating manager sign a certification statement that he has "personally examined" and is "familiar with the information submitted..." and that "the information contained in this form is true, accurate, and complete." Nevertheless, the Board is somewhat dependent on the veracity of the data supplied by the licensee, at least in the short term.

4.2C: **The whole industry was built on deceit, and lives have been lost as a result. We've learned not to trust federal or state government.**
Response: Opinion noted.

4.2D: **It's artificial to separate out the different sectors of radioactive materials use and radionuclides; radionuclides from all sectors (academic, health care, commercial, power, government) come from reactors.**
Response: In addition to the radionuclides that are shipped in LLRW from nuclear electric generating plants, many of the radionuclides used in other industries, which find their way into the LLRW stream, are produced in non-power reactors such as test and research reactors. However, some are also produced in accelerators and some are naturally occurring.

4.2E: **The benefits of the safe use of radioactivity in areas such as nuclear medicine, biomedical research, radiographic weld testing, home fire alarms, and the generation of electrical power are numerous.**
Response: The Board recognizes that radioactive materials are being used in a large variety of applications that result in useful products and services.

(2) Medical/research generators

4.2F: Certain radioactive materials uses enhance public health. (+5)
Response: The Board is aware of numerous beneficial applications of radioactive materials in medicine, research, agriculture, and industry that impact human health in a variety of ways, from medical diagnostics and therapy to food production and public safety.

4.2G: Certain radioactive materials uses worsen public health.
Response: There are some risks associated with almost every human endeavor, including the use of radioactive materials. Although the Board continues to seek and evaluate relevant data, the Board has not yet been made aware of specific health effects information which would indicate that LLRW cannot be safely managed consistent with existing and proposed standards.

4.2H: Almost all medical LLRW is short-lived, ranging from hours to days, and can be held on site until it decays to background. (+1)
Response: The Board understands that most applications of radionuclides for medical diagnostics and therapy involve the use of short-lived radionuclides, although longer-lived radionuclides are used in some therapy procedures and in some medically related research, such as certain tests required by the U.S. Food and Drug Administration before certain new drugs can be approved for use.

4.2I: Universities and hospitals generate long-lived waste as well as short-lived waste.
Response: See response to comment 4.2H.

4.2J: While estimating the dollars and jobs attributable to the use of radioactive materials, the Management Plan fails to include the potential revenue and employment to be generated by conversion to non-radioactive methods.
Response: The Board recognizes that there may be some compensating effect in dollars and jobs if processes which use radioactive materials were converted to the use of non-radioactive materials. This impact cannot be readily calculated at this time. Some of the difficulties in making this kind of projection include the following:

1. There are no known substitutes for some applications.
2. Substitute processes and materials are not fully commercialized for some processes so their costs cannot be reasonably estimated.
3. Radioactive materials are more efficient for many processes than substitute materials.
4. Economic data on the potential use of substitutes is not readily available.

Although the use of radioactive materials in Massachusetts apparently is not trivial from an economic point of view, the Board Is not attempting to make any statement regarding the overall economic cost/benefit ratio of the use of radioactive materials. However, a statement will be added to the Plan recognizing the potential offsetting economic effects of switching to substitute materials or processes.

4.2K: Medical and medical research waste should be separated from other LLRW.
Response: To the extent that medical LLRW falls into different disposal classes than LLRW from other sources, it would be segregated at a disposal facility. However, most medical waste (with long-lived radionuclides) that must be disposed of in a licensed LLRW facility may have the same radionuclides or may possess similar radiological properties as other LLRW. Where this is the case, there is no apparent justification for separating one from the other.

4.2L: Medical waste is only a tiny portion of the Massachusetts LLRW waste stream.(+4)
Response: In 1992, the LLRW stream shipped for disposal that was classified as "Medical" represented 0.8 percent of the volume and less than 0.1 percent of the radioactivity of all LLRW shipped from Massachusetts for disposal. However, when "commercial" activities are included, such as the production of radionuclides by various devices (such as research and other types of reactors and accelerators), as well as the synthesis of the compounds which incorporate these materials for medical use and health science research, medically related LLRW represents a substantially larger contribution to the LLRW stream (greater than 7 percent of the volume and 56 percent of the radioactivity). When the two, one-time remediation waste streams (i.e., the decommissioning of the Watertown Arsenal and the Texas Instruments site) are removed from the analysis, the medically related LLRW stream represents more than 30 percent of the routinely produced volume and more than 56 percent of the radioactivity shipped for disposal in 1992.

4.2M: The nuclear industry uses the medical angle as a scare tactic. Medical uses produce very few curies of long-lived LLRW compared to nuclear power plants. (+1)
Response: Although long-lived radionuclides are shipped in LLRW from nuclear power reactors, the 1992 LLRW survey data reveals that more than 80 percent of the long-lived radionuclides expected to remain after 500 years of decay originated in the commercial, academic, and health sectors. Although this ratio will vary from year to year (with the cyclic shipments of activated metals from power reactors, in particular), it is expected that the relative contribution from these other sectors will remain significant.

4.2N: Medical and biological research will slow down without a dependable waste disposal plan.
Response: The Board understands that the availability of reliable and economical waste management options is important to all users of radioactive materials, and will continue to seek responsible waste management options for the generators in the Commonwealth.

4.2O: Too much radioactive materials use is for experimentation, and is not truly necessary or useful.
Response: The Board has not yet been made aware of any trivial uses of radioactive materials, but supports reduction in use when possible. Given the relatively costly measures and license restrictions required for using these materials, there does not appear to be incentive to experiment at will. In addition, radioactive materials are used in a wide variety of applications, most of which appear to serve a useful purpose. However, there is a great deal of "experimentation" being done in the sense that radioactive materials are used extensively in research programs in academic, agricultural, and biotechnology areas, such as in qualifying new pharmaceuticals.

(3) Commercial generators

4.2P: According to the Wall Street Journal, Congressmen were bribed by Nuclear Metals, Inc., to push through a law forcing the federal government to buy 36 million lbs. of unneeded depleted uranium, for the price of $200 million.
Response: The Management Board is not in a position to comment on this allegation and, in any event, has no legal or regulatory authority over Nuclear Metals in this area.

4.2Q: I don't approve of Nuclear Metals, Inc. I want the opportunity to say I will not take their waste because they make a profit on death.
Response: The Management Board Is not in a position to judge Nuclear Metal's use of radioactive materials. The Board has, however, worked with the DEP and other state agencies to ensure the expeditious removal of radioactive materials and LLRW from a "holding basin" behind the NMI facility.

4.2R: NMI waste is military waste. Don't say LLRW does not include military waste.
Response: Some LLRW is generated and shipped as commercial LLRW by various contractors in Massachusetts who produce products for the Department of Defense (DOD). The Management Plan will be revised to include such activities in the description of the sources of commercial LLRW.

4.2S: Some commercial LLRW generators who supply other generator categories (health, academic) centralize much of the waste that would otherwise be produced by the academic-health care sectors; this maximizes safety of radioactive materials use, and minimizes LLRW management.
Response: See response to comment 4.2L.

(4) Nuclear power generators

4.2T: Nuclear utilities hide some of their more dangerous LLRW in the same categories used for less dangerous waste streams.
Response: The definition of LLRW and the regulations governing its management currently allow mixtures of various radionuclides to exist in a given waste stream or package as long as the total concentration of the combined radionuclides does not exceed specified limits. These mixtures may exist in any waste type and in any of the disposal classes defined as LLRW, although the concentrations of certain radionuclides are more restricted than others in each class. Therefore, very small quantities or concentrations of long-lived radionuclides are allowed to exist in the LLRW classes requiring the least long-term care. Conversely, very large quantities of radionuclides that do not represent a long-term hazard but that represent a potentially significant short-term hazard are allowed in the "safer" waste disposal classes (i.e., Class A). The nuclear power utilities, In particular, but other LLRW generators as well, ship waste for disposal that contains these various mixtures of radionuclides allowed by the regulations. Also, see response to comment 4.2M.

4.2U: Wisely managed nuclear power can be important to our long-term energy future.
Response: The Management Board recognizes that nuclear power represents a significant segment of the energy mix in the region and in the country. The Board's primary responsibility is the management of LLRW, which is one of the many factors that must be addressed by our society in assessing the viability of present and future applications of nuclear power.

4.2V: The LLRW issue isn't a power issue.
Response: See response to comments 4.2L, 4.2M, and 4.2U.

4.2W: If you eliminate the nuclear power plant waste, the rest is manageable.
Response: A large proportion of LLRW produced in Massachusetts comes from industries other than nuclear power. See responses to comments to 4.2L and 4.2M.

4.2X: Board should appoint a citizens advisory committee that can provide input on all LLRW policy.
Response: The Board members, who are citizens themselves, represent a diversity of background and opinion intended to represent various Interests In the Commonwealth, particularly the health and safety of the general public. In addition, a Public Participation Advisory Committee assists the Board's staff with public informational programs. The Board's meetings, and the entire process, are open to public comment and scrutiny, and the process involves the participation of various citizen interest groups at all stages of the LLRW management process. All of the Board's plans and regulations, as well as the related regulations of other state agencies, have been submitted for public comment and public hearings. Therefore, the Board receives citizen advice on policy matters through these many mechanisms. The Board does not believe that another advisory committee is required for this purpose at this time.

4.3 LLRW Volumes and Activity

Public Comments:

4.3A: The public isn't concerned about volume, they're concerned about activity.
Response: The radioactivity of LLRW is certainly the key waste characteristic requiring attention for much of the LLRW generated in the Commonwealth. The Board therefore collects information and reports on the radioactivity of LLRW as well as its volume.

4.3B: Management Board should produce a chart that shows an average year of waste shipped for disposal by volume and activity, rather than a snapshot of a year which may not be representative of the average.
Response: The Board is aware that data from any one year may not adequately represent long-term LLRW characteristics. However, an "average year" based on several years of data may not be representative either. The Board's annual LLRW survey requests LLRW projections to attempt to capture trends and anomalies. The use of historical data will not suffice for this purpose for many reasons, including the rapid changes in waste volumes and characteristics experienced in recent years. Also, historical data does not adequately capture expected future events such as decommissioning, decontamination campaigns, and major maintenance and retrofit campaigns.

However, long-term LLRW management programs will eventually require studies which attempt to characterize waste streams expected over the entire operating life of an LLRW management facility. These studies would allow an average year to be estimated. The Board expects to conduct such studies in the future.

4.3C: Regarding NMI, it is important to make the distinction between volume and radioactivity.
Response: The volumes and activities of LLRW shipped for disposal by NMI and other radioactive materials users is documented in the annual LLRW survey report published by the Board. In the past three years, NMI waste volumes have been illustrated along with others as representing significant contributors to overall LLRW volumes shipped for disposal from the Commonwealth. The data has also revealed that NMI was not a major contributor to the radioactivity shipped for disposal.

Chapter 5: Public Participation: A Cornerstone of LLRW Management

Background:

Chapter 111H encourages meaningful citizen involvement in the management of LLRW in the Commonwealth. The statute envisions two-way communication between the Management Board and the public, rather than the selling of policies through one-way "public relations." Toward this end, the Act requires that a full-time Public Participation Coordinator (PPC) must be employed by the Management Board "to encourage and facilitate the participation of interested persons in all of the processes established in or pursuant to this chapter."

In addition to publicizing the Management Plan and making sure the Management Board hears what the public is saying, the PPC is charged with conducting continuing public informational programs on the issues of radioactive materials; the characteristics and nature of LLRW; technologies relating to LLRW storage, treatment, and disposal; and the possible hazards of LLRW and its improper management. Chapter 5 of the Management Plan discusses the Importance of citizen participation, describes the Act's various requirements for such participation, and offers recommendations, including a "Public Participation Plan" (Appendix 5A).

5.2 Public Participation: What It Is, and Why It is Important

Public Comments:

5.2A: The public needs to be involved in the Board's decision-making.
Response: Opinion noted.

5.2B: I appreciate the comment period extension.
Response: Opinion noted.

5.2C: Am worried that citizen participation will be inadequate in the planning process and oversight responsibility. (+2)
Response: Chapter 111H provides various opportunities for public participation. In the Draft Public Participation Plan, the Board has made recommendations to "flesh out" the mandates of the law, including many public hearings, access to information, and funding for the community supervisory committees. Additionally, the flexibility the Board showed in extending the public comment period is an example that supports public participation.

5.2D: Stated goals are lip service only; the Board is not sincere.

Response: Opinion noted. The Board feels otherwise, and offers its meeting minutes, its Annual Reports, its Survey Reports, and the transcripts of its hearings and briefings as evidence to the contrary.

5.2E: **The public comment period is an empty, meaningless gesture, since communities lack veto power.**
Response: Opinion noted. There are many opportunities to influence LLRW management decisions.

5.2F: **Conflicts of interest make public participation fruitless, or nearly fruitless. [NOTE: See Section 2.3 for other comments relating to conflicts of interest.]**
Response: Opinion noted.

5.3 Public Participation Provisions of Chapter 111H

Public Comments:

5.3A: **The Public Participation Advisory Committee (PPAC) guidelines provide virtually no way for this group to affect policy, other than reviewing the Board's educational materials; there is no direct mechanism to offer recommendations to the Board on critical matters.**
Response: Opinion noted. Nevertheless, the PPAC, working through the PPC, can play an important role in influencing policy on the critical matter of public participation. In addition, PPAC members, like all other citizens, may submit letters, or testimony at public meetings.

5.3B: **I find it ludicrous that the Board wastes the taxpayers' money sending volumes of literature, books, notices, and other mailings on a regular basis to people who have no use for them or interest in them.**
Response: Opinion noted. The Board reimburses the Legislature with funds from the generators. Thus, in effect, the Board is not spending taxpayers' money. The staff routinely updates the mailing list, and removes the names of most people who have indicated no interest in the Board's mailings. Many people have requested the material.

5.3C: **Appreciate PPC's efforts to disseminate information.(+1)**
Response: Opinion noted.

5.3D: **Appreciate Board's efforts to involve concerned communities.**
Response: Opinion noted.

5.3E: **Governor Weld's pattern of disregard for the public interest and the environment is documented regarding the Recontek siting proposal.**
Response: Opinion noted.

5.4 Recommendations to Expand Opportunities for Public Participation

[NOTE: Comments for this section are grouped under six subtopics – general comments, public hearings, public comment process, PPAC and staff, financial assistance to communities, and education.]

Public Comments:

(1) General comments

5.4A: **Keep the process of managing LLRW wide open to the public you serve.**
Response: The Board strives to do just that, and to listen to any specific suggestions along those lines.

5.4B: **There must be access to information and opportunity for public input in future proceedings.**
Response: Opinion noted.

5.4C: **Send draft documents to members of professional societies.**
Response: Typically, the Board sends notices to various professional societies to notify them that documents are available if requested. Many members of LLRW-related professional organizations are on the Board's mailing list.

5.4D: **A siting decision was made as early as 1991, and therefore the public participation process and hearings are a sham. (+3)**
Response: Opinion noted. No such decision has been made. The Board does not see it this way, and only the Board can make such a decision.

5.4E: **Public participation does not exist because only the Board sets the policy, even though it listens to people at its meetings. (+1)**
Response: Opinion noted. Participation can and does exist without the power to set policy.

5.4F: **Nothing we say at these meetings will stop the siting of a dump.**
Response: Opinion noted. See response to 5.4 D.

5.4G: **Important to involve people in western MA, since that's where the facility will be.**
Response: No decision has been made about the location of a facility. The Board has not voted to site such a facility in Massachusetts. It is important to involve citizens regardless of where a facility may be, if there is to be an in-state facility. All citizens of the Commonwealth should be involved. The Legislature and the Management Board see this as a statewide problem to be solved by the state as a whole. Safety and health will be primary concerns whether LLRW goes to an in-state or out-of-state facility.

5.4H: **Industries should be required to fund anti-siting advertisements before election day.**
Response: Opinion noted.

5.4I: **Public participation will be controlled by the nuclear industry, who will "buy off" local officials like town managers, selectmen, and others to get their way.**
Response: Opinion noted. Public participation is provided pursuant to state law and Management Board policies.

5.4J: **The public needs the opportunity to be more involved in the rights of anyone to produce LLRW in the first place.**
Response: Opinion noted. This is a comment which falls outside of the legally mandated mission of the Board.

5.4K: **Recommend that the Management Board meet with the caucus of regional legislators in the southeastern MA area.**
Response: This is a possibility, when time allows. The Board is regularly in communication with legislators on all pertinent issues.

5.4L: **People should be told they can order (through their Congressman) the NRC's Annual Report, containing the report on "Abnormal Occurrences."**
Response: The Public Participation Coordinator will make an effort to include this information in future presentations.

5.4M: **All records of every generator should be made public.**
Response: Opinion noted. See response to 5.4J.

5.4N: **The public, through experience, has become cynical about what happens despite the best intentions of government.**
Response: Opinion noted.

5.4O: **Time and time again, science has fallen on its face. We don't trust government spokesmen today because of past deceit on scientific issues by government.**
Response: Every Board member either sympathizes or empathizes. However, thorough, continuous scrutiny by a skeptical public makes repetitions less likely.

5.4P: **This issue has been kept quiet, with secret planning.**
Response: All Management Board meetings have been and are open to the public, and the Board has made a sincere effort to publicize the planning early in the process. Some media have not considered this stage newsworthy, however.

(2) Public hearings

5.4Q: **The Board should meet again in Plymouth.**
Response: Opinion noted. The Board plans to continue its meetings throughout the state.

5.4R: **7 p.m. is not a good time for a meeting if you really want public participation.**
Response: Opinion noted. Other times have their own drawbacks.

5.4S: **At public meetings, the Board should require any speaker with a vested interest to publicly state such an interest.**
Response: Unfortunately, this well-intentioned idea could be more trouble than it is worth, considering the difficulty of arriving at a definition of "vested interest" to which the whole audience would agree.

5.4T: **Board should hold more of its regular meetings around the state.**
Response: The Board will continue meeting around the state, as much as Board members' schedules will permit.

5.4U: **Please hold briefing sessions on Cape Cod, in the Fall River/New Bedford area, and on the North Shore.**
Response: The Management Board will attempt to hold meetings in all those areas. Sometimes, briefing sessions are held on request.

5.4V: **Board didn't do an adequate enough job publicizing the public hearings so that people could attend. (+3)**
Response: Opinion noted. See response to 5.4P.

5.4W: **Board should hold another round of public hearings. (+3)**
Response: The Management Board conducted 17 sessions to take testimony on the draft LLRW Management Plan and associated regulations. This number is significantly greater than the number of sessions any other state agency has held on any issue. Before these sessions began in February of 1993, the Public Participation Coordinator conducted 14 briefing sessions.

5.4X: **Board should hold another hearing in Berkshire County.**
Response: Opportunities for public testimony on the draft documents were provided at briefing sessions in Lee and North Adams after this comment was received.

5.4Y: **Draft documents were not publicized well enough. Spend money on newspaper ads.**
Response: The Board used newspaper ads to announce most of its briefing sessions held after the public hearings, due to concern expressed during the public hearings.

5.4Z: **There is no public participation because people haven't attended the public hearings in large numbers.**
Response: Public participation should not be measured in numbers only. One individual can represent the views of hundreds of others.

5.4AA: **There should be a public debate or forum of experts on radiation health effects, preferably before the end of the public comment period or before any siting vote by the Board. (+3)**
Response: The Board agreed that it wanted to hear the views of various scientists on studies regarding low-dose exposure to radiation prior to its discussion and decisions regarding long-term LLRW management options, including siting. To that end, it held a panel discussion on November 3, 1993.

5.4BB: **Board should schedule public hearings on health effects of exposure to radioactive wastes, and on source reduction and elimination, which must be adopted as the most important legal mandate of the Board. (+3,321)**
Response: The Management Board's 17 sessions to take comments on its draft Management Plan and regulations provided opportunities for public comment on this issue, and many comments were received. Other forums, including Board meetings and meetings with LLRW generators, also allow public comment on these subjects.

5.4CC: **Briefing sessions would be more helpful than public hearings in the second round.**
Response: Opinion noted. While the Board's briefing sessions allowed less formal discussion, the tradeoff was reduced attendance.

5.4DD: **It's good to put people in a circle at meetings.**
Response: Opinion noted. The Board used this format whenever it was possible at the briefing sessions.

5.4EE: **It's OK to read statements or letters at public meetings. Some people need to do it that way in order to stick to their points, etc.**
Response: The Board agrees, provided this does not violate time limitations or other ground rules announced earlier in the meeting, to ensure fairness to all the other participants.

(3) Public comment process

5.4FF: **Notify people through the agenda of specific upcoming discussions relating to the draft documents.**
Response: The Board believes its agendas include such information.

5.4GG: **Comment summary discussion papers on each issue should be sent out before the pertinent Board meeting to people interested in that particular issue.**
Response: The Board sends such documents to those persons who have indicated an interest in receiving them.

5.4HH: **Be sure to send every commenter something summarizing the comments, telling what the Board's thinking was on various viewpoints, what action was taken.**
Response: The Board's Response to Public Comments report will fulfill this concern.

5.4II: **There should be a well-thought-out system for organizing all public comments and presenting the nature and number of arguments on each issue – not just a tally, but a summary, for the public as well as the Board. Each commenter should get something like this in the mail, showing precisely which sections of the Management Plan or regulations are relevant to their comments and what other commenters have said about the same sections.**
Response: After consideration and discussion in March, the Board adopted the summary format seen here. It summarizes each comment under the pertinent chapter of the Management Plan that could be revised in light of the comment. However, the Board decided not to send anything to commenters until after the Board has taken action on the comments. In addition, the public comment discussion documents were distributed to all who requested them.

5.4JJ: **Extend comment period to mid-May.**
Response: The comment period was extended to July 15.

5.4KK: **Board should extend comment period by two months. (+1)**
Response: The comment period was extended to July 15 -- three and a half months from March 31, the original deadline.

5.4LL: **Board should extend comment period by three months.**
Response: See response to comment 5.4KK.

5.4MM: Board should extend comment period by six months to September 30. (+3,322)
Response: The Board extended the public comment period by three and a half months. It was concerned that any additional extension would jeopardize access to the Barnwell, South Carolina, disposal facility, for which the Board successfully negotiated an access contract.

5.4NN: Board should extend comment period by one year. (+1)
Response: See response to comment 5.4MM.

5.4OO: Board should extend comment period (no timespan specified). (+18).
Response: See response to comment 5.4MM.

5.4PP: Board should wait at least another year or two before considering the issue of LLRW siting. (+1)
Response: The Board must continue its activities in a timely manner to fulfill its responsibilities under the federal Low-Level Radioactive Waste Policy Amendments Act and the Massachusetts Low-Level Radioactive Waste Management Act.

5.4QQ: There wasn't enough time provided to review and comment on the draft documents.
Response: Opinion noted. However, the Board felt there was sufficient time from its announcement in late January, 1993, through to the close of the comment period on July 15, for citizens to review the draft documents.

5.4RR: Draft documents were not mailed out early enough.
Response: This was one of the reasons the Board extended the comment period.

5.4SS: Saturate media with notice of comment period extension.
Response: The Board made an effort to do so.

5.4TT: Board will never consider the public comments.
Response: The Board believes it is making a strong effort to listen to the public. Its final LLRW Management Plan will reflect significant response to public concerns.

5.4UU: Don't forget possible impact of comment period extension on access to Barnwell.
Response: See response to comment 5.4MM.

(4) PPAC and staff

5.4VV: Slow down because the PPAC was only recently formed and needs more time.
Response: See response to comment 5.4PP.

5.4WW: The PPAC is inadequate, ineffective. (+1)
Response: Opinions noted. The PPAC has provided excellent advice to the PPC -- advice which was in turn relayed to the Management Board. The PPC is always interested in any specific ideas for making the PPAC more adequate and more effective.

5.4XX: Board hasn't provided enough money to the PPC for public education. (+2)
Response: Opinion noted.

5.4YY: Board has deliberately kept PP staff small, to minimize public outreach.
Response: The Board has attempted to design the most cost-effective means of providing for public participation.

(5) Financial assistance to communities

5.4ZZ: Board should make grant monies available to citizens groups to hire lawyers, engineers, health physicists, etc. for purpose of reviewing and evaluating the draft Management Plan and draft regulations. (+1)
Response: The Board chose to spend its resources in other ways. The draft documents were distributed to numerous organizations and individuals, including those representing the groups mentioned above, and comments were received.

5.4AAA: All communities within 10 miles of a site should receive money to evaluate the environmental impact of a site, not just the site community.
Response: See response to comment 2.4J.

5.4BBB: It would make more sense to provide money to communities now, to help them review the draft documents.
Response: Without a decision to site, it would have been difficult to justify such a large expenditure of funds. The Board is attempting to spend its limited money wisely.

(6) Education

5.4CCC: Siting process should be fully documented and deposited in local libraries of those communities whose sites are under consideration. Active, thoughtful, and knowledgeable citizen participation cannot occur if there is not immediate access to all information.
Response: Agreed. This is the Board's intention, although there could be some debate over the definition of "fully." See Appendix 5A of Management Plan.

5.4DDD: We need more public education.
Response: More public meetings will be scheduled; many more if the Board votes to site. The Board is also considering the distribution of curriculum aids for high school science teachers.

5A – Public Participation Plan

Public Comments:

5AA: Dialogue is the goal. Board should liberally encourage public comments at its regular meetings, and should respond to them. (+1)
Response: The Board's meetings contain numerous opportunities for public comment and response. The PP Plan has been amended to specify that such comments are encouraged.

5AB: Board should call for public comments before every vote.
Response: Every effort is made by the Board's chairman to do this. The PP Plan has been amended to require this.

5AC: During public comments at Board meetings, allow the public enough time, without interruption. Some people drive a long way and rearrange their schedules, just to get to the meeting. They deserve courtesy and respect.
Response: The Board encourages public comment. The Chairman looks at the time available, looks at the number of people making comments, and divides up the time to be as fair as possible.

5AD: Board should concentrate on the issues, not the personalities of public comment speakers.
Response: Opinion noted.

5AE: More public education, public awareness, is needed for the "common man." (+1)
Response: Opinion noted.

5AF: Siting process should be "very public," including bidding of contracts, with opportunities for the public to see what contractor is really doing.
Response: Agreed, to the extent possible under the state's contract regulations.

5AG: Plan should delineate rules that will be applied to the hearing process.
Response: The Board wishes to retain flexibility in this matter. Different hearings require different rules.

5AH: Recommend that Board hire an independent facilitator to convene appropriate stakeholders for the purpose of planning public participation mechanisms and responsibilities. It is not appropriate to have any top-down control of public participation. A "facilitator" should be hired right now to begin efforts.
Response: The Board feels that its Public Participation Coordinator has done a good job in this regard. However, if siting is initiated, the Board foresees a possible need for independent facilitators to plan and moderate certain meetings or hearings in the future.

Chapter 6: Regional Compacting and Negotiations With Other States on LLRW Management

Background:

State law directs the Management Board to represent the Commonwealth in all negotiations with other states for the purpose of establishing a regional LLRW disposal facility. Because regional facility agreements are executed between states, through regional compacts or contracts, the Governor and the Secretary of Environmental Affairs also share in this responsibility. Negotiations began in 1981 for a possible compact of New England states, but such a compact did not come about. The Board has kept in touch with other states and compacts through ongoing discussions, and this process will continue.

6.3 Negotiations Conducted After the Management Board's Establishment

Public Comments:

6.3A: Massachusetts should join a compact with another state that's willing to take MA waste. (+1)

Response: The Management Board, on behalf of the Commonwealth, has consistently followed two concurrent policy directions in order to ensure the safe and environmentally sound management of LLRW: (1) to join a regional compact or negotiate a contract with a state or states willing to accept MA LLRW for disposal; and (2) to conduct the planning, preparation of regulations, and other actions necessary if the Board determines that in-state facility siting is necessary. The Management Board's stated priority has always been (1), above. If MA is able to join an existing or new regional compact, the compact approval process will involve the MA Legislature, the voters in a statewide election (pursuant to the requirements of Chapter 503, the referendum law approved in 1982 regarding LLRW facility and nuclear power plant siting), and Congress.

6.3B: **The Board is proposing to take LLRW from other states, but no other state is willing to take our waste.**
Response: At the present time, no other state (or compact region) is willing to accept MA waste for disposal. The Board has not "proposed" to take LLRW from other states; rather, the Board has suggested that such an option be considered among the many long-term strategies available to the Commonwealth.

6.3C: **Participating in a compact as a host state initially or on a rotating basis would make siting a facility more economically and politically viable.**
Response: The cost effectiveness of various LLRW disposal facility sizes is evaluated in the Management Board's draft LLRW Management Plan (VOL II, Chapter 13), and illustrates the potential economies of scale associated with operating larger facilities. The political viability of MA serving as a host state in a regional compact, or becoming a host state through a subsequent rotation of host state responsibilities, is unpredictable.

6.3D: **Maine and New York have laws prohibiting the importation of LLRW from other states. MA should have such a law too.**
Response: In addition to Maine and New York, there are many other states and regional compacts that have laws or regulations prohibiting the importation of waste from outside their borders. The Commonwealth does not have such a prohibition in its statutes because it wants to retain the full range of options for the safe and environmentally sound management of LLRW. As discussed in the draft Management Plan, the acceptance of out-of-state LLRW can provide lower user fees for LLRW generators paying the operating costs of a disposal facility, and expanded opportunities for community compensation and benefits, and public participation.

6.4 Feasibility of Regional Compacting

Public Comments:

6.4A: **Compacting options should be updated to reflect progress on the new Texas/Maine/Vermont compact, which effectively eliminates their potential for cooperation with MA.**
Response: All sections of the LLRW Management Plan will be updated prior to publication to ensure accurate reference to the latest regional compacting activities around the country. The existence of a Texas-Maine-Vermont compact may or may not be detrimental to Massachusetts, depending upon agreements that the Commonwealth could potentially negotiate with this new compact. Prior to the creation of this compact, all three of these states publicly refused to accept waste from outside their state borders. Current provisions in the new compact enabling law may allow some latitude in that policy in the future.

6.5 Recommendations on Regional Compacting

Public Comments:

6.5A: **Board should negotiate with other states more actively, with Board members assuming this task if other individuals have been unsuccessful.**
Response: The Management Board works in concert with the Secretary of the Executive Office of Environmental Affairs, a Management Board member, who is Governor Weld's Cabinet secretary designee for LLRW management issues, including discussions with other states. The Management Board has been successful in negotiating a short-term contract with the Southeast Compact Commission to use its disposal site in Barnwell, South Carolina – an accomplishment not matched by some other states who also sought access to Barnwell. Discussions with other states are conducted through meetings as well as written and telephone communications.

6.5B: **The Board should take a broader approach to the search for an out-of-state solution. Instead of hoping for an offer from another state, the "deal" that would take care of everything overnight, the Board should be actively lobbying other states and compacts with specific proposals and offers of money. And certain portions of our waste stream could go to different states or compacts.**
Response: One of the limiting factors in the Board's discussions with other states is the ability to show that MA has funds available to pay an "entry fee" in exchange for LLRW acceptance. In 1992 and again in 1993, Governor Weld filed a bill with the Massachusetts Legislature to provide such a fund. That bill is pending in the Legislature.

There is no prohibition in MA law from sending portions of the MA LLRW stream to different states or compacts. This is current policy, with the Management Board encouraging MA LLRW generators to ship their waste to various other states for treatment and disposal.

6.5C: **Why not just jump ahead of the game and tell Rhode Island, "We will pay you to join us in a compact." Just a two-state compact, to make sure we can exclude waste from other states. There would be lots of resistance to taking waste from too many other states.**
Response: The Management Board will not make any decisions about siting a facility for Rhode Island or other states unless it votes to initiate siting. Rhode Island officials are in frequent communication with Massachusetts LLRW officials, and understand the Commonwealth's process that may lead to a decision to site an in-state disposal facility and compact with one or more states. Rhode Island will not site a disposal facility for its own small volume of waste, but would pay Massachusetts, or another state or regional compact, to send its waste to a facility here. In fact, Rhode Island's legislature years ago approved a regional compact written by the same special commission that wrote the Massachusetts Low-Level Radioactive Waste Management Act. Also, see response to comment 6.3A.

6.5D: **A big facility for the New England states would be better managed and better designed; I prefer a compact.**
Response: Opinion noted.

6.5E: **MA should join a compact with other states rather than "go it alone" in building a disposal facility.(+1)**
Response: Opinion noted.

6.5F: **Because the whole issue is so political, the Board should urge the utilities, who may have influence in other states, to help arrange for an out-of-state solution. The Board and MA nuclear utilities should consider hiring lobbyists in other states, as Maine Yankee did in Texas.**
Response: In informal discussions with various LLRW generator groups, including those with members representing utilities, manufacturing, and biotechnology, the Management Board has encouraged them to pursue such activities as retaining lobbyists to represent their interests with other states and regional compacts.

6.5G: **Changes in existing state laws should be made to facilitate compacting and siting.**
Response: Opinion noted.

Chapter 7: Classifying Low-Level Radioactive Waste

7.3 The NRC LLRW Disposal Classification System

Public Comments:

7.3A: **The NRC system presents a hazard to human health.**
Response: Although the Board's proposed classification system incorporates the NRC classification system for disposal, the proposed Massachusetts system goes beyond the federal system promulgated in 10 CFR 61. The Massachusetts system is designed to allow the Board to classify waste in terms of its total toxicity or hazard, based on radiological, chemical, and biological characteristics for other management purposes besides disposal. A related issue is that Chapter 111H requires that, "The institutional control period shall not be less than the minimum time required for any low-level radioactive waste present at the site to decay to the maximum concentrations above natural background levels permitted to be released into air or water in unrestricted areas under federal and state law." Therefore, the Massachusetts law and proposed regulations contain provisions that are intended to achieve better performance than required by the specified performance objectives (e.g., zero release design goals, ALARA).

Risk-based analyses performed for 10 CFR 61 and other LLRW disposal facility assessments reveal that acceptable potential radiological exposures and health effects are associated with disposal of LLRW that is accomplished in accordance with Part 61 standards. LLRW disposal that may be accomplished under Massachusetts laws and proposed regulations could be expected to provide superior results.

In addition, the Massachusetts provision cited above regarding the length of the institutional control period will require Massachusetts to remove any long-lived radionuclides remaining after that time.

7.3B: **A Massachusetts facility could be federalized in the future and forced to take radwaste more hazardous than allowed under state laws and regulations.**
Response: Since laws can be amended, it is possible that LLRW sites could become the responsibility of the federal government in the future. The Management Board does not believe that it would be possible to demonstrate that substantially more "hazardous" waste, such as high-level radioactive waste, could be safely disposed of in a typical LLRW disposal facility. On a site-specific basis, it may be possible to revise the classification system to allow greater quantities of radioactivity or higher concentrations than the current classification limits allow. However, this would require substantial re-analysis and re-licensing and is not considered to be very likely.

7.3C: **Board should recommend to the federal government a reclassification system according to longevity and toxicity. It should be revised before siting occurs.(+4)**

Response: The proposed Massachusetts classification system embodies the NRC classification system of 10 CFR 61. The NRC system is based on limiting concentrations of radionuclides according to their longevity and their toxicity. In addition, the Massachusetts system requires additional features which classify LLRW in more detail and relate to storage and treatment in addition to disposal. See response to comment 7.3A. At this point the Board is following developments, but has not decided to request a change from the federal government.

7.3D: **Some LLRW is very long-lived and very toxic, and should be classified as HLW. The "low-level' term should be put in quotation marks, since the system goes by the source, not the content, of the waste. (+4)**
Response: LLRW can contain all of the radionuclides that are contained in HLW as well as many others. The principal difference between LLRW and HLW is that LLRW is restricted by regulation to contain substantially smaller concentrations and quantities of some radionuclides (in particular, long-lived and especially hazardous ones). This limitation on quantity and concentration implies significantly different long-term management issues and potential hazards for LLRW relative to HLW. Nonetheless, the Board recognizes the hazards to public health and safety from improper disposal of LLRW.

7.3E: **The NRC classification system cannot protect for the unforeseeable future.**
Response: LLRW may contain varying amounts and concentrations of radioactivity depending on a number of factors, including the longevity of the radionuclide (expressed as "half-life"). For very long-lived material, only very small concentrations of the radionuclide are allowed in LLRW that could be disposed in a near surface disposal facility. This keeps the health risks to one who might be exposed to the material at any time in the future to the low levels that are considered acceptable based upon today's health-risk standards.

Larger quantities and concentrations of shorter-lived materials are allowed to be disposed of in such a site because they will decay to inconsequential concentrations within a time frame that permits institutional controls and engineered safeguards to remain effective.

Unlike other types of non-radioactive waste disposal facilities, a licensed LLRW disposal facility must also limit the total quantity of certain radionuclides that the site can accept over its operating life, if analyses indicate that larger quantities of the radionuclides would preclude the site from meeting the performance objectives at any time in the future.

The Management Board believes that, if a suitable site for a facility could be found in Massachusetts, LLRW can be managed safely. The "systems approach" (which includes the classification system) incorporated in the current regulatory framework provides satisfactory assurance that LLRW can be disposed with little risk to present and future generations under all reasonable scenarios.

7.3F: **The classification system is flawed because LLRW contains long-lived radioisotopes.**
Response: See responses to comments 7.3C, 7.3D, and 7.3E.

7.3G: **Waste that decays within a few years should not be commingled with longer-lived waste.**
Response: The Management Board has indicated an intent to segregate waste containing only short-half-life radionuclides from waste containing long-half-life radionuclides in a disposal facility. If such a facility is built in Massachusetts, the Board will set specific requirements for such segregation.

7.5 Recommendations for a "Total Hazard" Classification System

Public Comments:

7.5A: **LLRW definition should include only isotopes with half-lives that can decay within 100 years. All long-lived wastes should be classified as HLW. (+2)**
Response: See responses to comments 7.C through 7.3F.

7.5B: **Since it is unclear whether the "Total Hazard" system will have long-lasting or even temporary benefits, and impose unnecessary costs on LLRW generators, it should not be enacted at this time.**
Response: The total hazard classification concept, as embodied in the proposed Massachusetts regulations, is necessary to implement requirements of Chapter 111H, Section 12(b)(1). In addition, the data required for this classification system is that necessary to develop detailed waste characterization information for various LLRW management purposes, including facility design, performance assessment, and licensing (whether in-state or out-of-state).

7.5C: **LLRW should be redefined to take into account various half-life characteristics, before anything should be done.(+10)**
Response: See responses to comments 7.3C through 7.3F.

7.5D: **Plan the facility for 100 years, Class A only. Planning for thousands of years has very little credibility.**
Response: It would be convenient to assume that Class B and Class C waste are not our concern. Aside from the fact that the Commonwealth and the Management Board are statutorily mandated to manage all LLRW except Greater-Than-Class C, this waste exists in storage or as future decommissioning waste, it is being produced currently, and is likely to be produced for the foreseeable future. Like other hazardous materials and long-lived hazardous waste, it must be managed in a responsible manner.

Delay in planning and implementing the disposal of greater-than-Class-A waste could have greater consequences than taking action now. Measures are being taken to minimize present and future risk. Implementing temporary measures virtually guarantees that additional occupational (and possibly public) exposures will occur due to the additional handling of the material in implementing and maintaining one temporary measure after another.

7.5E: **Classify waste not by how it's produced, but by how much harm it can cause.**
Response: See responses to comments 7.3C through 7.3F.

Chapter 8: Mixed Waste: The Dual Regulatory System

Background:

Until 1976, all LLRW regulation was the responsibility of the NRC. That year, Congress passed the Resource Conservation and Recovery Act (RCRA), and unintentionally created a system of dual regulation of the very small portion of LLRW that is mixed with hazardous waste, or otherwise exhibits hazardous properties.

Sixteen years later, the NRC and EPA are still working to develop all the joint policies necessary to fulfill their shared regulatory responsibilities over "mixed waste." The lack of uniform guidance from these two agencies has caused serious repercussions to those who produced mixed waste, as well as to those in federal and state regulatory agencies charged with enforcing what in some cases is contradictory, duplicative, and costly public policy.

Massachusetts LLRW management officials have joined their counterparts in other states to press the two federal agencies for decisions that will resolve the contradictions and duplications. The Management Board has proposed a series of recommendations on this issue, and has joined other states in lobbying the DOE to establish a mixed waste disposal facility (since most mixed waste produced in the nation is generated by DOE).

8.1 Introduction

Public Comments:

8.1A: **This chapter is well written and provides a good, comprehensive summary of the mixed waste issue.**
Response: Opinion noted.

8.2 Defining Mixed Waste

Public Comments:

8.2A: **Page 8-2: The discussion on relative volumes of mixed waste versus LLRW is somewhat confused by text and Figure 8-A presentations of 1991 and 1990 data, respectively. It falls short of the desired recommendation to solve the mixed waste issue and to appropriately allocate resources to address the much larger challenges of hazardous waste.**
Response: When the Management Plan was written, the only data available nationally that could be translated into a pie chart was 1990 data. However, MA had more recent, 1991 data on mixed waste, which was important to include in the discussion. Hopefully, more current national mixed waste data is available to update the chart, because it so visually dramatizes the small percentage of mixed waste that comprises the entire LLRW stream. In addition, the narrative around Figure 8-A will be improved to clearly delineate any difference in years of data referenced.

8.4 Federal and State Regulatory Responsibilities

Public Comments:

8.4A: **The dual system leads to ambiguity and lack of responsibility in oversight.** (+7)
Response: Opinion noted.

8.4B: **The volume of commercial mixed waste is so small on a national basis that it makes no practical sense for any state to have to develop its own disposal capability. The expense would be astronomical.**
Response: Opinion noted.

8.6 Mixed Waste Management Recommendations

Public Comments:

8.6A: **It is within the Board's authority to play an active role on the mixed waste issue on the national level.** (+2)

Response:Opinion noted. The Management Board will continue to work actively for a national solution to the mixed waste disposal problem.

8.6B: **The Commonwealth should support efforts by the LLW Forum to convince the DOE to assume commercial mixed waste disposal responsibility.**
Response: The Management Board has, and will continue, to support such efforts.

8.4C: **The disposal of mixed waste may be exponentially more expensive than the disposal of LLRW. Therefore, treatment to reduce the volume and radioactivity of mixed waste is crucial to safe, efficient management of mixed waste.**
Response: It is not clear that the disposal of mixed waste is always more expensive. For example, a landfill operation in Utah, run by Envirocare, Inc., is the only RCRA Part B-permitted mixed waste landfill in the country. That site is authorized to accept only certain types and quantities of mixed waste, not all commercial mixed waste generated in the country. On the other hand, the state of Nebraska calculated that a mixed waste disposal unit developed as part of its LLRW disposal facility would have to charge approximately $1,200 per cubic foot to cover its costs.

Treatment of mixed waste is certainly an important factor in the management of this waste. Because no mixed waste disposal facility exists in the nation that can accept all types of this waste, eliminating the hazardous component or characteristic of the waste through various types of treatment can result in a waste that is only "LLRW," which may allow easier disposal. Likewise, separating the radioactive components or characteristics of the waste through treatment, such as storage for decay for short-lived radionuclides, can render the results only "hazardous" waste, which also may allow easier disposal.

8.4D: **The regulatory framework for mixed waste is a regulatory nightmare.**
Response: Opinion noted.

8.4E: **The Board should recommend that DEP amend its regulations to allow storage for decay for mixed waste.**
Response: The Board has made this recommendation in the Plan.

8.4F: **The Board's recommendation is a sound one that DEP amend its regulations to allow mixed waste containing short half-life material to be eligible for storage for decay, in order to be disposed of as hazardous waste, not mixed waste.**
Response: Opinion noted.

8.4G: **The Board's recommendation that DPH and DEP should seek to identify and eliminate duplicative and inconsistent regulations is appropriate.**
Response: Opinion noted.

Chapter 9: Packaging and Shipping LLRW; Emergency Preparedness and Response

9.4 Regulatory Requirements for LLRW Transportation

Public Comments:

9.4A: **While the history of LLRW transportation may involve the release of no radioactivity, there could be an accident tomorrow.**
Response: Opinion noted. Whether or not future accidents involving LLRW occur, the Commonwealth has a system to respond to them. The Massachusetts Emergency Management Agency (MEMA) coordinates emergency planning and support services with local civil defense officials in each community, who work with local fire departments and local and state police. If an accident were to occur, this team would immediately contact the Nuclear Incident Advisory Team (NIAT), an arm of the Massachusetts DPH, which coordinates emergency response, determines the hazards associated with a transportation event, and determines the necessary response actions.

9.4B: **The markers on the back of trucks carrying radioactive shipments are difficult to see.**
Response: Opinion noted. The placards designating certain types of radioactive materials shipments are regulated by the U.S. Department of Transportation, not the Commonwealth or the Management Board.

9.7 Emergency Preparedness and Response

Public Comments:

9.7A: **The state should not be responsible for all accidents that occur during LLRW transportation.**
Response: The Commonwealth is not responsible for any LLRW accidents. That liability rests with the waste generator and shipper. Massachusetts exercises its authority to protect the public health and the environment, however, by ensuring through the NIAT unit that whatever mitigating actions may be necessary are implemented by the responsible parties.

9.7B: **DPH and MEMA are in no position to take on another major task like LLRW would require. They have been struggling with implementation of EPA's SARA Title III since 1986 and have not completed one quarter of the task because of lack of personnel and funding. (DPH)**
Response: Opinion noted.

9.7C: **Concern that the firefighters who respond to an accident involving radioactive materials may not know how to deal with the waste.**
Response: Training for local firefighters is coordinated through MEMA to ensure appropriate first responses. Some training is also provided to local firefighters by companies that use radioactive materials.

9.8 Recommendations to Improve LLRW Transport in the Commonwealth

Public Comments:

9.8A: **The likelihood of truck accidents, and transportation in general, should be an important consideration. (DEP) (+2)**
Response: The Management Board concurs that the transportation of LLRW is a significant consideration in the management of this waste. The Board's LLRW Management Plan identifies a number of recommendations to enhance the present safe transportation of LLRW. They include actions to be taken if the Board determines that an in-state LLRW storage, treatment, or disposal facility is necessary, such as training exercises on emergency preparedness and response to LLRW shipments, traffic control planning, and LLRW transportation risk analysis.

9.8B: **You shouldn't choose a site that would require sending big trucks carrying LLRW on winding country roads. (DEP)**
Response: Opinion noted. The Management Board has always been of the opinion that the transportation of LLRW is a significant consideration in the management of this waste. Suitability of roads and the ability to upgrade roads are incorporated in the draft DEP siting criteria regulations.

9.8C: **Concerned about possible transportation accident, especially if MA sites a facility. (+1)**
Response: Opinion noted. See response to comment 9.8A.

9.8D: **The small communities through which the shipments could pass are not equipped to handle a major accident. (DEP)**
Response: Through the coordination of state and local emergency response personnel, and the NIAT team, which provides knowledgeable consultants to assist local authorities in the case of any transportation incident, the resources of a single municipality are augmented by state and federal response actions.

9.8E: **It is neither fair nor safe to transport LLRW to other states.**
Response: Opinion noted. LLRW continues to be transported to other states for storage, treatment and disposal. The record of LLRW shipments has been excellent during the past 20 years since records have been maintained. During that period, only 53 transportation accidents have occurred, involving about 1,000 packages. Of the 53 mishaps, only four involved the release of any LLRW, and no public health impact resulted.

9.8F: **Greatest risk is probably in transporting LLRW; the further the distance, the greater the risk of an accident.**
Response: Opinion noted. See statistics on LLRW shipment record in the response to comment 9.8E.

9.8G: **Facility should be as close to the source of LLRW generation as possible, to minimize the risk of accidental release during transportation. (DEP)**
Response: Opinion noted. Data on LLRW accidents and incidents do not support the assumption that accidents occur as a result of longer transportation distances, however.

Chapter 10: Low-Level Waste Treatment Practices

10.1 Introduction

Public Comment:

10.1A: **Defining "treatment" to include storage for decay blurs the difference between a treatment and a storage/disposal facility. (DPH)**
Response: "Treatment" is defined in Chapter 111H as "any method, technique, or process ... designed to change the physical, radioactive, chemical or biological characteristics or composition of LLRW in order to render such waste safer for management, amenable for recovery, convertible to another usable material, or reduced in volume." "Storage for decay" is defined as "a procedure in which LLRW with a relatively short half-life is held for natural radioactive decay in compliance with applicable federal and state regulations." The process of storing short-lived waste for decay meets the requirement of the "treatment" definition, since such storage changes the radioactive characteristics of the waste.

Whether any centralized storage for decay facility that may be sited, built, and operated in Massachusetts would be described as a "storage" facility rather than a "treatment" facility is unimportant, as the siting requirements for both are the same.

10.2 Source and Waste Volume Minimization Policies

Public Comment:

10.2A: **On Page 10-5, Table 10-2 should be updated to reflect the surcharges imposed at the Barnwell facility for the period 1/1/93 to 6/30/94. The disposal costs should also be updated for Barnwell and Hanford.**
Response: It is the author's intent to update all tables in the Plan. This table will also explain the difference between surcharges mandated by federal law and surcharges adopted by the Southeast Compact Commission.

10.3 Source and Waste Volume Minimization Procedures

Public Comment:

10.3A: **One of the state's largest LLRW generators, Dupont, is a leader in efforts for strong waste reduction.** (+2)
Response: The Management Board is aware of Dupont's policy regarding source and LLRW minimization, and its successes regarding waste reduction. The Board does not feel the Management Plan is the appropriate report to cite specific cases of LLRW minimization accomplishments. The Board prefers to retain in the Plan the general references to source and volume minimization successes.

10.8 Recommendations for a Massachusetts Source and Waste Volume Minimization Program

Background:

The Department of Public Health (DPH) is required by Chapter 111H to consult with the Management Board in establishing a program for source and waste volume minimization, and storage for decay.

Chapter 111H does not specify a heavily bureaucratic or regulatory program. The language of the statute has been interpreted by the Board as intending to educate licensees about technically sound and economically feasible minimization procedures, which would be incorporated into each generator's minimization plan.

The Management Board recommends that:

- DPH establish a minimization program with the goals of (a) reducing the use of radioactive materials, (b) minimizing the volume of LLRW; and (c) encouraging storage for decay of short-lived radionuclides.
- The DPH program include three basic elements: (1) information exchange and technical assistance; (2) educational outreach, and (3) regulatory actions.

While deliberating on the type of minimization recommendations to submit to DPH, the Board discussed the issue of setting explicit percentage reduction requirements. The Board opted not to include specific percentages in its recommendations, believing that every LLRW generator is different with regard to percent reductions already achieved.

[Note: The public comments received on this topic are grouped under seven subtopics: federal actions; Management Board actions; DPH actions (general); source reduction; waste minimization; education/research and development; and enforcement.]

Public Comments:

(1) Federal actions

10.8A: **When the federal government has cleaned up all waste sites 100 percent, then we could talk about producing more waste. Not one ounce should be produced until we know we can responsibly deal with it.**
Response: Opinion noted. The Management Board does not have the statutory authority to force the federal government into remediating its own LLRW sites. However, the Board has been part of a national effort, involving many states, to convince the DOE to establish new sites for the treatment and disposal of DOE's mixed waste. This effort, aimed at identifying treatment and disposal sites which may also be available for commercial mixed waste, will enable DOE to reduce significantly the amount of LLRW which it has generated over the years, and for which it is responsible.

10.8B: **Reduce LLRW levels by getting the DOD to assume responsibility for Nuclear Metals waste.**
Response: Nuclear Metals, Inc. (NMI) is reportedly trying to convince the DOD to assume responsibility for NMI's waste. This effort does not require action by the Management Board.

(2) Management Board actions

10.8C: **Commends the Board and DPH for proposing a minimization program. (DPH)**
Response: Opinion noted.

10.8D: **Pleased to see source reduction is to be the first priority.**
Response: Opinion noted.

10.8E: **Source reduction/elimination is most important. It should be the Board's principal objective. (+20) (DPH)**
Response: The Management Board agrees that the reduction in usage of radioactive sources, as well as their elimination, when appropriate, should be the principal objective of any Massachusetts program of source and waste volume minimization. The Board has recommended that the DPH draft regulations pertaining to a Massachusetts minimization program be amended to provide a greater emphasis on this concept, as well as the objective of achieving "zero" generation of LLRW in the future.

10.8F: **The Board should be responsible for source reduction, not the DPH.**
Response: Section 13 of Chapter 111H assigns the responsibility for establishing and operating a program of source reduction, waste volume minimization, and storage for decay to the DPH. The framers of Chapter 111H chose to delegate this authority to DPH because of DPH's role as licensing regulator, which could link the requirements for source and waste volume minimization, and storage for decay, to licensing and license renewal.

10.8G: **The Management Plan is flawed because In does not take a pro-active approach to reduction and substitution for radioactive materials use. It should be more like EPA's SARA Title III – the federal law for the management of chemicals.**
Response: The Management Board believes both Chapter 111H and the LLRW Management Plan take pro-active approaches to source and waste volume minimization, as well as source substitution. Section 13 of Chapter 111H directs all LLRW generators "to avoid unnecessary contamination of items during the use of radioactive materials; to segregate radioactive waste from non-radioactive trash; and to prepare and implement plans for the utilization of all appropriate source minimization, volume minimization, and storage for decay methods." These same concepts are stressed in the Management Plan, especially the Board's recommendations to DPH.

10.8H: **The Board should establish its own minimization criteria, in addition to its recommendations to DPH.**
Response: As noted, Chapter 111H gives DPH the regulatory responsibility over minimization criteria, not the Management Board. However, if the Board proceeds to site an LLRW storage, treatment, or disposal facility within the Commonwealth, Chapter 111H, section 38, bestows to the Board the authority to approve "waste acceptance criteria" for any LLRW entering a facility. Such criteria "shall be designed so as to promote source minimization, volume minimization, and storage for decay by generators...."

10.8I: **To bring about waste minimization, the Board should be frank with generators like the Museum of Fine Arts, whose use of radioactive materials is frivolous, and say, "What are you, nuts? Do you know what you're doing here?"**
Response: The Management Board agrees that unnecessary uses of radioactive materials that can generate LLRW should be avoided, and that if appropriate alternatives are available, they should be used, instead.

10.8J: **The basic principle would be to condense this waste, rather than disperse it.**
Response: Opinion noted. The commenter is suggesting that LLRW be managed in fewer, rather than greater, numbers of locations. That concept has been discussed by the Management Board, whose members will consider this idea when it acts in February, 1994, on various short- and long-range LLRW management options (including on-site storage for five years, centralized storage, disposal facility siting, etc.).

10.8K: **The Board should build a disposal facility only in return for the industry reducing LLRW according to strict standards and deadlines. (DPH)**
Response: Massachusetts law requires LLRW generators to develop and implement plans to minimize LLRW. Draft regulations of the DPH require that such plans, and the LLRW minimization that would result, be a requirement to receive a license to use radioactive materials. Such a system will succeed in forcing LLRW reductions even greater than the notable record of minimization already achieved by LLRW generators.

(3) DPH actions (general):

10.8L: **The M1 regulations are a strong part of the whole package.**
Response: Opinion noted.

10.8M: **Question the need for waste minimization regulations when minimization activities are universally in place. (+1) (DPH)**
Response: While the Management Board recognizes the successes in LLRW minimization achieved through the voluntary efforts of generators, it believes the statutorily authorized source and volume minimization program will achieve further gains in source and waste reduction. In particular, the Board believes the principal objective of the minimization program should be source reduction/elimination, where practical, and notes that voluntary gains in source minimization or elimination have been slower to occur.

10.8N: **Important that minimization regulations don't penalize generators who have already made progress.** (+2) (DPH)
Response: The Board does not believe that the DPH minimization regulations will have that effect.

10.8O: **The minimization regulations are too general/too vague/too weak. (DPH) (+1)**
Response: The Management Board's concern that the draft DPH minimization regulations neither specify what standards or criteria the Department would apply in approving a user's minimization plan nor offer quantitative goals led the Board to submit additional recommendations on this subject to DPH in October, 1993. The Board suggested that DPH add standards or criteria to aid LLRW generators in understanding exactly what would be required of them.

10.8P: **The proposed waste minimization regulations provide little guidance for generators, particularly those who generate less than 100 cubic feet per year. For example, proposed M1 regulations [M1.60(b)] require that waste minimization statements (as well as plans) be evaluated in accordance with sections M1.50, 60 and 70. However, these sections provide only very broad statements of policy and little in the way of concrete requirements. More guidance regarding plan content and other requirements is necessary. (DPH)**
Response: See response to comment 10.8O. In addition, after considering public comments, in October, 1993, the Board recommended that DPH eliminate the 100-cubic-foot threshold level in its draft M1.60(b) regulation, which triggers the requirement for the development and implementation of a minimization program and a "detailed plan." In September, 1992, the Board had suggested a two-tiered approach to the requirement for minimization plans, with "small volume" generators completing a "simplified" plan, and "large volume" generators fulfilling the requirements of a detailed plan. The Board now believes the DPH regulations should place equal emphasis on large and small LLRW generators' requirements to perform minimization.

10.8Q: **If you leave it up to industry to tell you how far they can go with minimization, they are not really going to tell you. (DPH)**
Response: See response to comments 10.8E and 10.8O.

10.8R: **If you site a MA disposal facility, that serves as a disincentive to the minimization/elimination of radioactive waste production. The Board's focus on siting rather than minimization legitimizes and encourages the production of LLRW. The DPH regulations could balance that out. (+3) (DPH)**
Response: The Management Board is not "focussed" on facility siting. The Board is charged by Chapter 111H to plan for the short- and long-range management of LLRW generated in the Commonwealth. Such planning must encompass all possible management options available to the state, including facility siting, in order to be prepared if the Board determines that an in-state facility is necessary.

The Board has proposed a comprehensive group of recommendations on source and waste volume minimization for incorporation into the DPH program regulations. It has been as absorbed in issues pertaining to source and LLRW volume minimization as it has in addressing policies regarding facility siting and other LLRW management issues.

10.8S: **To make a sincere effort at waste minimization, DPH should model the M-1 regulations on the TURA regulations done by the DPH's Division of Environmental Health Assessment. If they choose not to, it shows the lack of a sincere effort, thus the Management Board will not be entitled to vote on siting. (+1) (DPH)**
Response: After reviewing the details of the Toxic Use Reduction Act (TURA) statute and regulatory program, the Management Board has recommended that DPH evaluate this program and include in its minimization regulations those aspects of TURA that may assist DPH in assessing the "completeness" of minimization plans.

The Board notes that TURA does not set performance standards or discharge limits (for toxic chemical use), but requires individual companies to set their own goals. TURA enables the Commonwealth to monitor the successes (or failures) of groups of toxic chemical users, categorized by similar chemical uses, in order to establish "priority user segments" and target minimization efforts on specific chemicals or specific operations. The Board has recommended that DPH amend its draft regulations to incorporate the TURA philosophy, especially the concept of "priority user segments," while being mindful that in comparing similar LLRW generators, each user's history of source and volume reduction should be considered.

The Board has further suggested to DPH that the Governor's Advisory Council on Radiation Protection could serve in a role similar to the TURA Advisory Council.

10.8T: **The DPH minimization regulations should ensure that no radioactive waste is dumped into the solid waste stream. (DPH)**
Response: The Management Board has recommended that the DPH minimization program regulations be amended to incorporate the same policy statements against a Below Regulatory Concern practice that are contained in Chapter 111H.

10.8U: **The DPH minimization regulations should include specific figures defining background radiation. (DPH)**
Response: Natural background radiation may vary by locality, by the sensitivity of the instrumentation used, and by the definition of "background" used. The Board supports the requirement to identify existing radiation levels at candidate sites, contained in Chapter 111H and the DPH Part M licensing regulations.

10.8V: **Before any regulation is adopted, three tests should be met: (1) is there a problem?; (2) the proposed regulations must have a reasonable potential for modifying behavior in a way that will alleviate the problem; and (3) the costs of regulation must be commensurate with the expected benefits. Source and waste volume minimization are not problems; they are**

legitimate subjects of pride, having been achieved without regulation. No evidence suggests that imposing regulations would expedite or accelerate the process to any measurable extent. (+1) (DPH)
Response: There is no question that many LLRW generators have achieved exceptional results in waste minimization. However, state law requires the Management Board to recommend, and DPH to establish, a program of source and waste volume minimization. Management Board members believe that additional gains can be achieved through such a DPH regulatory program, especially in the area of source minimization. The Board also believes that the DPH program fulfills the three tests identified by the commenter.

10.8W: **Given the successful implementation of volume minimization accomplished by radioactive materials users, the promulgation of detailed regulations in this area will not further improve the existing situation. (DPH)**
Response: See response to comment 10.8V.

10.8X: **The Board's proposed source and waste volume minimization regulations are unnecessary, frivolous and wasteful. If necessary, appropriate changes should be made to Chapter 111H to delete any statutory requirements for it. (DPH)**
Response: Opinion noted. See response to comment 10.8V.

(4) Source reduction

[NOTE: Comments on source reduction have been further divided into three categories: (4a)general; (4b)substitution/elimination; and (4c)financial incentives.]

(4a) General

10.8Y: **The Management Plan does not recognize the need for source reduction.**
Response: The LLRW Management Plan describes the statutory requirements for source reduction, and emphasizes its importance in eliminating materials that can lead to LLRW production. During its revision, the Management Board will include more emphasis on source reduction and source elimination, where appropriate, and will describe the Board's support for a "zero" LLRW production goal.

10.8Z: **Stop the generation of all LLRW, except medical, until we have a safe place to put it. (+1) (DPH)**
Response: Opinion noted. See response to comment 10.8E.

10.8AA: **The ultimate goal should be zero production of LLRW. (+16)**
Response: The Management Board agrees, and will add language to the Management Plan describing its philosophy, and has recommended that similar language be included in DPH's minimization regulations.

10.8BB: **There should be a cap on the number of LLRW generators allowed in the state, like a town sets a limit on the number of liquor licenses. This will help with planning and projections. (DPH)**
Response: Opinion noted.

10.8CC: **There should be a cap on the amount of LLRW a generator can produce. (DPH)**
Response: See response to comment 10.8E.

10.8DD: **The Draft Management Plan and regulations spend an inordinate amount of time on facility siting, and very little on source reduction.**
Response: See response to comment 10.8R.

(4b) Substitution/Elimination

10.8EE: **Stop all use of radioactive materials, thus ending the generation of LLRW. We can creatively live without them...we can go back to frontier times. (+5)**
Response: Opinion noted. See response to comment 10.8E.

10.8FF: **We need to take a strong look at why we use so much radioactive materials in the first place, and press for alternatives to waste-producing technologies, such as renewable energy sources. (+5)**
Response: See responses to comments 10.8E and 10.8O.

10.8GG: **No community should be burdened by a site or the siting process for an LLRW facility until a specific and legally binding timetable is established for the front-end elimination of all unnecessary radioactive waste produced in the state. For a waste generator to continue generating LLRW, it must be shown that: (A) the work is necessary for the health and well-being of our citizenry, and the advantages outweigh the risks, and (B) there is no non-radioactive alternative to the radioactive production in question. Many of the activities that produce this waste would fail these tests, including the nuclear generation of electricity. Without linking siting to the phase-out of unnecessary LLRW production, all that follows is a pointless discussion of how to better do something which should not be done.**
Response: See response to comment 10.8E.

10.8HH: **Stop nuclear power. Institute stringent energy conservation measures. Rely on safer, more efficient energy sources. (+19)**
Response: The Management Board's mission in State government is to ensure the safe and environmentally sound management of LLRW, not to decide which uses of radioactive materials are appropriate and which are not. The Board is responsible for all LLRW generated, not just LLRW from certain licensees.

10.8II: **The DPH minimization regulations should, following the examples of programs at Cornell University and Dartmouth College, require generators to replace long-lived radioactive materials with shorter-lived ones in order to eliminate the production of long-lived waste and avoid the chance of long-lived radionuclides escaping from a disposal facility. (DPH) (+1)**
Response: The Management Board agrees that wherever possible, short-lived radioactive materials should be substituted for long-lived ones. The DPH regulations contain such a policy statement.

(4c) Financial incentives

10.8JJ: **The generators of LLRW should be responsible for source and volume minimization, not the taxpayers of MA.** (+3)
Response: Massachusetts law, Chapter 111H, requires DPH to plan and institute a program of source and waste volume minimization, and storage for decay. This program would be managed as part of the licensing conditions under the DPH "Agreement State" functions, for which fees to staff the program would be reimbursed by the generators.

10.8KK: **The incentive to reduce LLRW would remain, even with an in-state disposal facility, because the cost of disposal would still be high. (DPH)**
Response: Opinion noted. Regardless of the Management Board's decision about in-state facility siting, Chapter 111H requires a program of source and waste volume minimization.

10.8LL: **If producers were forced to pay all costs – the full, true costs, including future health, environmental, and cleanup costs -- they would quickly find ways to cut back on the use of radioactive materials and thus the generation of LLRW. (+9)**
Response: Opinion noted. LLRW generators do pay the present-day costs of storage, transportation, treatment, and disposal. Many generators have been induced to minimize the volume of their LLRW by hikes in disposal costs at the regional disposal sites. Generators have been paying the costs of LLRW management, as well.

10.8MM: **As a way of reducing radioactive sources, the costs of disposal should triple next year, with assessments based on volume, radioactivity, and duration of the hazard; or, a surcharge should be implemented. (+1) (DPH)**
Response: A variety of surcharges have been imposed at facilities currently accepting LLRW for disposal. It is believed that rising costs have significantly reduced the volume of waste generated. Federal government surcharges alone rose from $20 per cubic foot of LLRW in 1980 to $40 per cubic foot in 1991.

10.8NN: **Provide credits and incentives to LLRW generators who excel in waste reduction and who use new or non-nuclear technologies to minimize generation, and penalties to those who do not. (+2) (DPH)**
Response: Opinion noted.

10.8OO: **If you reduce profits, it forces minimization.**
Response: Opinion noted.

10.8PP: **Regulations should not be limited to radioactive materials, but should include alternative costs of using non-radioactive materials. (DPH)**
Response: The minimization "plans" that will be required under DPH minimization regulations require LLRW generators to evaluate the alternatives to using radioactive materials.

10.8QQ: **Perhaps we could charge NMI such high fees that they would go out of business.**
Response: Opinion noted. Whatever fees would be approved by the Management Board as charges for using an in-state facility (if one is sited in Massachusetts), or would be assessed by DPH, such fees would be challenged if they were not fair and equitable.

(5) Waste minimization

[NOTE: Comments on waste minimization have been further divided into three categories: (5a)percentage quotas; (5b)storage for decay; and (5c)recycle.]

(5a) Percentage quotas

10.8RR: **The DPH minimization regulations should require DPH to set specific goals/standards for each generator's minimization and source-reduction effort, with specific "carrots" and "sticks." (+13) (DPH)**
Response: The Management Board does not support the idea of setting explicit percentage reduction requirements. Instead, the Board believes each radioactive materials user should set its own minimization level, and should work with other similar generators to identify ways for further reduction.

10.8SS: **The DPH minimization regulations should require reduction by 5 to 10 percent per year. (DPH)**
Response: See responses to comments 10.8S and 10.8RR.

10.8TT: **Don't put quotas on minimization; the cost of disposal is enough of an incentive already. (+1) (DPH)**
Response: See responses to comments 10.8S and 10.8RR.

(5b) Storage for decay

10.8UU: **The DPH minimization regulations should require generators to hold waste for decay whenever possible. (DPH)**
Response: The Management Board supports the practice of storing waste for decay to the maximum extent possible. Current NRC guidelines allow decay in storage for radioactive materials with half-lives of 65 days or less; licensees may be granted permission to store nuclides with up to 120-day half-lives, with proper justification.

The draft M1 regulations contain a provision [M1.70(b)9] that the minimization plan must include storage for decay procedures, including: (1) identifying radioisotopes and LLRW suitable for decay in storage; (2) developing a written set of procedures for the waste handling and waste processing steps necessary to isolate LLRW in storage for decay; (3) identifying an area where storage for decay can occur; and (4) evaluating the size of the storage area necessary to accommodate all wastes accumulated through the entire decay cycle. Any generator failing to utilize storage for decay would have to address this issue during re-licensure.

(5c) Recycle

10.8VV: **The concept of recycling is totally missing. (DPH)**
Response: The Board intends to review the draft Management Plan to ensure that this concept, which is embodied in the "treatment" definition of Chapter 111H, is properly emphasized in the Plan.

10.8WW: **Important to reduce, recycle LLRW on site. (DPH)**
Response: The Management Board is in agreement, and believes the concepts of source and LLRW volume reduction, as well as LLRW recycling, are included in the Management Plan. However, it intends to review the Plan while incorporating revisions resulting from its consideration of public comments, to ensure that these concepts are properly presented.

10.8XX: **Maximum, aggressive recapture of tritium should be required. (DPH)**
Response: See response to comment 10.8VV.

10.8YY: **If done properly, the treatment of depleted uranium shavings can allow some of the metal to be reused, reducing the amount that is buried. NMI has a contract with the Army for such treatment.**
Response: See response to comment 10.8VV.

(6) Education/research and development

10.8ZZ: **Legislation is needed to encourage research and development on source and waste volume reduction.**
Response: Opinion noted.

10.8AAA: **Seventy-five percent or more of our diseases are self-inflicted due tobacco use and poor eating habits. Better public education could prevent disease and thus decrease reliance on radioactive materials, thus decreasing the waste.**
Response: Opinion noted.

10.8BBB: **Concentrate on research to make LLRW less radioactive. (+1)**
Response: Opinion noted. This type of research is occurring in laboratories across the country. Source minimization is required by Chapter 111H. However, the efforts to reduce the radioactivity of LLRW do not diminish the Management Board's responsibilities over its safe management and disposal.

10.8CCC: **There should be a serious, structured education program to bring about a reduced LLRW waste stream. Sometimes it's just a lack of technical information that limits a generator's waste reduction efforts. (DPH) (+1)**
Response: The guidance materials produced by DPH in connection with its source and LLRW volume minimization program include provisions for encouraging LLRW generators to exchange information that will reduce the overall amount and radioactivity of LLRW generated. This educational component to the minimization program was recommended to DPH by the Management Board. Many licensees already attend annual society meetings and special seminars on this subject.

10.8DDD: **An industry review committee could be set up to recommend ways to reduce LLRW. (DPH)**
Response: In addition to small-group industry review committees that would be established to assist DPH in educating similar segments of radioactive materials use, the Management Board has recommended that DPH utilize the technical expertise of the members of the Governor's Advisory Council on Radiation Protection.

(7) Enforcement

10.8EEE: The DPH minimization regulations should be more specific as to enforcement procedures. (+3) (DPH)
Response: Enforcement of minimization plans and methods to achieve them is linked to the licensing of radioactive materials users pursuant to section 8 of Chapter 111H, which authorizes DPH to issue orders necessary to enforce the provisions of the statute. DPH orders may include modifying, suspending, or revoking licenses. The draft DPH minimization regulations [M1.40] contain an enforcement provision consistent with section 8, and the Management Board believes it is a compelling tool.

10.8FFF: Establish a minimization program that requires the disposal of all waste while space is available elsewhere; all waste generated in the previous year must be disposed of in order to receive renewal of operating permit. (DPH)
Response: Licensed users of radioactive materials in Massachusetts are required by NRC to dispose of all materials which cannot be recycled and reused, or stored for decay. This policy is admirable when disposal capacity is available; when disposal site access is threatened, such a requirement loses its effectiveness.

Chapter 11: Providing Treatment Capacity for Massachusetts Low-Level Radioactive Waste

Background:

Various types of treatment for low-level radioactive waste (LLRW) generated in Massachusetts occurs both on site where the waste is produced, and off site at privately operated treatment facilities. The most frequently used types of treatment include incineration, compaction, and decontamination at off-site processing companies.

Chapter 11 of VOLUME II analyzes the potential health, safety, and environmental impacts of treatment technologies and practices; their environmental requirements; their suitability for the LLRW managed in Massachusetts; and their cost-effectiveness; and offers recommendations to improve the safety or efficiency of treatment technologies and practices. Those recommendations include actions by the Commonwealth to:

- Encourage LLRW treatment as appropriate, in consideration of the public health, environmental, and economic impacts that treatment can effect.
- Inform the public that treatment technologies and practices can create potential risks of occupational and public exposure for the short term in contrast to the long-term problems that unstabilized and untreated waste possibly could cause within an LLRW disposal facility.
- Encourage treatment of LLRW to stabilize the waste in preparation for on-site storage, in addition to encouraging treatment for volume minimization.
- Serve as a resource to assist LLRW generators and others interested in the positive effects of LLRW treatment.
- Encourage the use of out-of-state treatment facilities, whenever appropriate.

11.4 Analysis of Treatment Technologies and Practices

Public Comments:

11.4A: I hope there will not be restrictions on our use of the 10-half-life (i.e., storage for decay) method of disposal.
Response: One of the Management Board's recommendations regarding volume minimization is the use of storage for decay to the maximum extent possible. Except in relation to any centralized storage, treatment, or disposal facility that the Board may determine needs to be developed within the Commonwealth, the Management Board does not have the regulatory authority to specify the duration of time (i.e., 10 half-lives) which should be followed in utilizing the storage-for-decay practice. If the Commonwealth is accepted as an Agreement State under the NRC program that transfers regulatory control from the NRC to the state, the DPH would have authority to regulate the length of the storage-for-decay period.

11.4B: Page 11-12: Table 11-4 data for treatment costs to reduce LLRW volume in a disposal facility are based on a 1987 study. The cost analysis should be updated to reflect current market and competitive conditions.
Response: The table referenced describes a study conducted for the Central Midwest Interstate Low-Level Radioactive Waste Compact Commission. That study was published in October, 1987, the Table 11-4 notes that the dollar values are 1987 dollars. The numbers will be updated to reflect 1992 values.

11.5 Recommendations to Improve Safety and Efficiency of Treatment

Public Comments:

11.5A: **Incineration is not a safe method of reducing the volume of radioactive waste. It should be banned in MA.** (+9)
Response: Opinion noted. The Board has decided to consider the siting of a centralized in-state, conventional (i.e., "mass burn") incineration facility only if it determines that out-of-state incinerators will no longer be available to treat Massachusetts LLRW in an economically justifiable and environmentally acceptable manner. There is presently no need for a centralized, in-state treatment facility of any kind, with the exception of treatment for some types of mixed waste (i.e., chlorinated fluorocarbons (CFCs) and lead-and-mercury contaminated waste), which currently is unavailable anywhere in the nation.

11.5B: **Page 11-17: Chapter 111H freezes the definition of LLRW as of Dec. 8, 1987, which excludes GTCC in the definition. Therefore, anything the federal government might do regarding "Greater than Class C" should have no bearing on the state and its responsibility to manage LLRW.**
Response: While it is correct that the state's definition of LLRW excludes GTCC waste – even if the federal government moves this waste into the LLRW category in the future – other federal actions can have a definite bearing on the Commonwealth's responsibility to manage LLRW. The endeavor of the federal government to establish a Greater than Class C (GTCC) disposal facility is one such example. State law requires the Management Board to annually determine the appropriate waste acceptance criteria for any state-sponsored, centralized treatment facility. Such criteria could effectively force treatment of some LLRW so that its concentration of radioactivity exceeds the Class A, B, or C requirements that define LLRW, and transfers the waste into the GTCC category. Because the management of GTCC waste is a federal responsibility, not a state's, waste acceptance criteria that could remove certain waste from the Commonwealth's care – were a federal GTCC disposal facility available – should be evaluated by the Management Board.

While the draft Management Plan identifies the potential negative health, safety, and environmental impact of certain treatment technologies that concentrate radioactivity in the process of reducing LLRW volume, Chapter 11 does not describe the potential for LLRW treatment to cause some LLRW to enter the GTCC waste category. The chapter will be amended to clarify this situation.

Chapter 12: Providing Storage Capacity for Massachusetts Low-Level Waste

Background:

Storage is the "holding of LLRW for treatment or disposal." It may occur at the site where the waste was produced, off site at a location of a broker or processor, at a storage facility, or at an LLRW disposal facility prior to disposal. The NRC restricts its licensees to the quantities of radioactive materials each may store on site, with a maximum allowable period of five years. Extensions may be granted; however it is not clear at present whether the NRC will allow storage extensions for more than five years beyond 1996, since that date is set in federal law requiring all states to manage LLRW through disposal.

Storage "technologies" and practices which are analyzed in this chapter for their potential health, safety, and environmental impacts; their suitability for the LLRW managed in Massachusetts; and their cost-effectiveness involve the types of packaging in which the LLRW is placed and any additional structural barriers of protection. The waste container itself serves as the major shield from radiation exposure for many types of LLRW, and is placed in an isolated, restricted area for storage. When the package is put in "shielding" (i.e., an "overpack," or "cask," or in a specifically designed storage building), these practices provide additional protection against the radioactivity in the waste.

Frequent, routine storage practices in MA include short-term, interim storage (up to five years) and storage for decay (i.e., the storage of LLRW with relatively short half-lives to allow natural radioactive decay to occur, resulting in waste that can be disposed of an non-radioactive trash because the radiation levels have decayed to less than the background radiation received from the sun, the earth, and other natural sources). Approximately 320 of the Commonwealth's 450 NRC-licensed users of radioactive materials utilize these storage methods.

12.2 LLRW Storage Technologies and Practices

Public Comments:

12.2A: **The fewer storage sites, the better. Spacing storage facilities throughout the country, and breaking up the problem into regions (i.e., regional compacts), increases the risk of mishandling, as opposed to one national site.**
Response: Opinion noted. Like all other states, Massachusetts is forced to comply with federal law which encourages LLRW management through regions rather than by individual states. While a national solution may be preferable, regional solutions are still favored over 50 state solutions.

12.2B: **Allow generators to sell or swap storage space as an interim solution.**
Response: The Management Board agrees that any system should be encouraged which enables LLRW generators to share storage space during the interim period before disposal facilities are available. The Board surveys generators annually to determine their willingness to share storage space, and their responses have indicated minimal interest.

12.2C: **Plan should differentiate between "typical" LLRW generators and the owners of contaminated sites which need to be decommissioned. Assumption that all generators can store on site may not be true at sites being decommissioned or remediated.**
Response: Opinion noted. The Management Plan will be revised to state that some sites where LLRW was buried years ago, which are now undergoing decommissioning, may have to receive authorizations from the agencies overseeing the decommissioning in order to store LLRW on site. The Management Board knows of no instance where federal agencies have prevented on-site storage if the LLRW from decommissioning has proper packaging and/or shielding.

12.2D: **Page 12-3: The discussion at the top of this page should be updated to reflect the current operational status of the disposal sites and the dates for when on-site storage may result.**
Response: The paragraph noted by this commenter, and all others containing similar references to three disposal sites in South Carolina, Washington, and Nevada will be revised to reflect the current status of those disposal locations.

12.2E: **The discussion in this chapter of the NRC's on-site storage policy should be updated to reflect its current policy.**
Response: Opinion noted. The discussion in Chapter 12 will be updated to reflect the NRC's new policy on on-site storage.

12.2F: **On-site storage is not so bad.**
Response: Opinion noted. The Management Board views on-site storage as an appropriate interim measure to manage LLRW. However, it is not a substitute for disposal, which isolates LLRW from the biosphere inhabited by human beings and their food chains on a long-term basis.

12.6 Recommendations to Improve Safety and Efficiency of Storage

[NOTE: Comments in this section are grouped under five subtopics – general comments; on-site storage; storage at nuclear power plants; centralized storage facility; and storage at specific license sites in MA.]

Public Comments:

(1) General comments

12.6A: **There is no such thing as safe storage. A risk assessment should be conducted relative to storage safety. (+1)**
Response: Opinion noted. Analyses have shown that storage can be accomplished safely within acceptable risk limits, as currently defined by state and federal regulatory agencies. Storage activities are regulated, and subject to routine inspections, in order to ensure that practices meet regulatory requirements to protect the public health, safety, and the environment.

12.6B: **People would not oppose storing LLRW if it did not contain long-lived radionuclides.**
Response: Opinion noted.

12.6C: **We do not want any LLRW storage at all in our area.**
Response: Opinion noted. Storage of LLRW currently occurs at hundreds of locations around the Commonwealth, within the limits of NRC licenses.

12.6D: **Because government and the nuclear industry have a deplorable record, and because there is no threshold for the harmful effects of radiation, why should we expect things are going to be different this time? (+2)**
Response: Opinion noted. Federal regulations set thresholds regarding radiation exposure to the public and to persons working with radioactive materials. In addition, current and proposed Massachusetts regulations place much more stringent requirements on LLRW disposal facility siting, design, and operation. While disagreements exist as to whether these standards are protective enough, the Management Board is committed to ensuring that its LLRW management policies protect public health, safety, and the environment. The Board also encourages public participation as a means to ensure that it has evaluated all aspects of a policy issue before the policy is adopted.

12.6E: **Regulations should ensure that "interim storage" cannot be used as an excuse to avoid the procedures and protections otherwise provided. (+1)**
Response: Interim storage, or the storage of LLRW for up to five years, still requires licensees to comply with all NRC regulations regarding the safe handling of LLRW. Licensees are currently inspected by the NRC. In the future, if the Commonwealth becomes an Agreement State, they will be regulated, monitored, and inspected by DPH. However, Chapter 111H does permit the Board to skip certain procedures for the development of a centralized "emergency or interim" storage facility. See response to comment 15.7I.

12.6F: **HLW and LLRW have very different storage requirements.**

Response: Opinion noted. The Management Board, on behalf of the Commonwealth, is responsible only for LLRW. The federal government continues to be accountable for regulating and managing high-level radioactive waste.

(2) On-site storage

12.6G: **Reasonable, responsible, on-site storage, particularly at hospitals and research facilities, should be fully explored prior to development of any new LLRW sites.**
Response: Opinion noted. The Management Board views on-site storage as only an interim, short-term LLRW management solution that cannot take the place of disposal (i.e., the "isolation of LLRW from the biosphere inhabited by human beings and their food chains"). Because of the state's requirements that disposal incorporate provisions for retrievability, the Massachusetts concept of "disposal" is really akin to "long-term storage." For LLRW containing only relatively short-lived radionuclides, the Board encourages on-site storage for decay.

12.6H: **Better to accept extended temporary storage than to adopt a permanent method concerning which substantive doubts have not been resolved.**
Response: Opinion noted. The Management Plan discusses three main options that the Board is considering to address LLRW management. One is an out-of-state disposal arrangement. One is in-state disposal facility siting. The third is interim storage, which could involve only on-site storage, could mean the establishment of a centralized, interim storage facility, or could involve interim storage in an out-of-state facility capable of storing Massachusetts LLRW. Whatever performance plan or plans it adopts, the Board will work to ensure that LLRW management does not present a threat to public health, safety, or the environment.

12.6I: **LLRW should be stored at present sites of generation. It doesn't make any sense to contaminate a new area. (+1)**
Response: Opinion noted. LLRW is stored on site at the present, according to the conditions in each LLRW generator's "possession" license. The NRC allows storage for no more than five years, and will not approve longer-term storage as a substitute for disposal. One of the options the Board will consider (when it votes on short-term and long-range LLRW management options in February, 1994) is whether on-site, interim storage of all LLRW should be part of the Commonwealth's action plan for managing this waste. However, the Board always has to consider emergency storage as well.

12.6J: **Some of the present generators' facilities could be reused as processing or holding or disposal sites.**
Response: Certainly the potential exists that locations of existing NRC licensees could be considered for treatment, storage, or disposal sites. In order for such locations to serve as centralized storage, treatment, or disposal facilities, the sites would require the same type of year-round, detailed site characterization that is required by state law and regulation for the siting of any such facility pursuant to the requirements of Chapter 111H. There would be no waiver of the environmental and other technical siting criteria required by the Department of Environmental Protection.

The Management Board surveyed all radioactive materials users to ascertain their interest in providing shared storage. All declined due to concerns over their liability.

12.6K: **On-site storage is safer than shipping LLRW in trucks.**
Response: Opinion noted. The transportation of LLRW has been highly successful, with only four transportation accidents occurring in which LLRW was released out of more than 4,200,000 LLRW shipments in the last 20 years (and no adverse health or environmental impacts resulting from the four incidents of release). Likewise, the record of on-site LLRW storage has been good. Twenty years of statistics are not available regarding on-site storage, however, to make a comparison with LLRW transportation. For LLRW containing only relatively short-lived radionuclides, the Board encourages on-site storage for decay.

12.6L: **The Board should push for more on-site storage for decay. Then there will be no need to rush into siting a new facility.**
Response: The Management Board has recommended that storage for decay of short-half-lived radionuclides be conducted to the greatest extent practicable. Longer-lived radionuclides in some LLRW, however, cannot be stored for decay under federal and state regulations. LLRW that can be stored for decay comprised approximately 25 percent of the waste produced in 1991 and 10 percent of the waste generated in 1992 in Massachusetts; waste that requires disposal in a licensed LLRW disposal facility cannot be forgotten.

12.6M: **Oppose any plan to allow on-site storage.**
Response: Opinion noted. On-site storage currently is utilized by the majority of NRC-licensed radioactive materials users in the Commonwealth. The Management Board views on-site storage as an appropriate interim LLRW management activity.

(3) Storage at nuclear power plants

12.6N: **Since the power plants will have to store their HLW on site until the year 2020, when an HLW repository will be available, just store LLRW at the power plants too, until 2020. (+3)**
Response: See response to comment 12.6J.

12.6O: The last resort regarding storage should be the nuclear power plants storing other generators' waste.
Response: See response to comment 12.6J.

(4) Centralized storage facility

12.6P: New storage facilities should be placed in areas which are currently nuclear-free.
Response: Opinion noted.

12.6Q: A storage facility would be better than a disposal facility because it would not be as supportive of the continued production of LLRW.
Response: Opinion noted. Regardless of one's feeling about the continued generation of LLRW, the Commonwealth is responsible under federal law to provide for the management and disposal of LLRW that already has been produced, and will be generated as a result of the current products and services that utilize radioactive materials, as well as the decommissioning of existing sites where radioactive materials no longer are used.

12.6R: Providing generators with a centralized storage or disposal facility could discourage waste minimization efforts.
Response: Opinion noted. The Management Board has recommended a strong policy on eliminating the sources that lead to LLRW generation, and minimizing the waste produced as well. Source and waste volume minimization are cornerstones of state LLRW management law; any centralized storage or disposal facility would have to include waste acceptance criteria that continue to achieve source and waste volume reductions.

12.6S: A facility should not be sited even if there are no homes nearby. Stewardship of the land for future generations must be the number-one criterion.
Response: Opinion noted. If the Management Board votes to initiate facility siting, it will be under the condition that any centralized storage, treatment, or disposal facility can be decommissioned and returned to "unrestricted use" by eliminating residual radioactivity. In addition, Massachusetts law requires that the institutional control period "shall not be less than the minimum time required for any LLRW present at the site to decay to the maximum concentrations above natural background levels permitted to be released into air or water in unrestricted areas under federal and state law."

That means that no LLRW which has concentrations higher than those standards could remain at the disposal facility after the institutional control period. Any waste fitting that description would have to be removed to another disposal site, or the institutional control period would have to be extended. In both cases, oversight of the waste is not eliminated.

This requirement of state law was enacted for the very reason that protecting public health, safety, and the environment for future generations is the main objective of any LLRW management policy.

(5) Storage at specific licensee sites in MA

12.6T: Discharges from Interstate Nuclear Services (INS) pollute the Connecticut River.
Response: Opinion noted. Because of citizen concern, the Management Board, interceding as an outside agent because it lacks jurisdiction over the INS situation, urged the NRC to review the activities of INS for conformance with federal regulations. DPH also evaluated the INS operation, and recommended some changes in procedures designed to enhance public health and safety.

12.6U: Interstate Nuclear Services' records are accepted at face value by government agencies; they should not be.
Response: Opinion noted. Concerns expressed by citizens or others frequently result in governmental attention. See response to 12.6T.

12.6V: The INS storage area should not become permanent. INS doesn't belong next to homes and playgrounds in the first place.(+1)
Response: INS must comply with the regulatory requirements of the NRC in order to retain the right to use radioactive materials and to handle any LLRW generated as a result. If Massachusetts becomes an Agreement State, and receives authority to regulate such licensees as INS, DPH will enforce state regulations pertaining to the use of radioactive materials. In either case, concerns brought by citizens will be reviewed. As long as INS complies with federal or state regulations, the company will be able to store LLRW on site within the limits of its license.

Chapter 13: Providing Disposal Capacity for Massachusetts LLRW

Background:

LLRW "disposal" is defined and effectuated differently under Massachusetts law than under federal regulations pertaining to disposal. The definition in Chapter 111H defines "disposal" as the "isolation of waste from the biosphere inhabited by human beings and their food chains." In implementing that concept, the law requires that any disposal method utilized in Massachusetts "shall permit retrieval and monitoring" of the waste.

In addition, state law requires that the institutional control period for any facility (i.e., that time after a facility is closed when the continued observation, monitoring, and facility care continues), "shall not be less than the minimum time required for any LLRW present at the site to decay to the maximum concentrations above natural background levels permitted to be released into air or water in unrestricted areas under federal and state law."

These provisions of Massachusetts law prevent state government from ever "walking away from" an LLRW disposal site, unless the site is free from radioactive contamination above the standards set by the NRC, the EPA, and the Massachusetts Departments of Public Health and Environmental Protection.

Chapter 13 summarizes federal and state LLRW disposal facility regulations, and identifies 10 current and developing LLRW disposal facility technologies that in the Management Board's opinion are capable of meeting the "retrievability" standard. It analyzes these suitable disposal technologies, as well as the unsuitable "shallow land burial" disposal method, for their potential health, safety, and environmental impacts, their environmental requirements, their suitability for LLRW managed in Massachusetts, and their cost-effectiveness. Recommendations are also included from the Management Board to improve the safety or efficiency of these disposal technologies, in the event a facility were to be built in the Commonwealth.

13.2 Defining LLRW "Disposal"

Public Comments:

13.2A: **The Board should stop using the word "disposal."**
Response: "Disposal" of LLRW has a different connotation to the Management Board than it does to the NRC. Massachusetts law explicitly prohibits shallow land burial. In addition, the state statute requires that any LLRW disposal facility must permit the waste to be monitored continuously, and retrieved if necessary for corrective action or to remove any concentrations above background levels at the end of the institutional control period. For purposes of fulfilling the requirements of federal law, all states, including Massachusetts, are responsible for LLRW "disposal."

13.2B: **Terminology is important in and of itself.**
Response: Much of the terminology used in LLRW management comes from the physical sciences, and from federal regulations.

13.4 Existing Disposal Activities in Massachusetts

Public Comments:

13.4A: **Page 13-8: Paragraph 2, gives the wrong percentage of waste shipped for disposal to Envirocare. Rather than being "less than 1 percent," the proportion for 1991 was actually 17.5 percent (7,450 cubic feet). The passage is also misleading because the site did not begin accepting MA waste until April, 1991. 1992 waste disposal at Envirocare is greater than that disposed of at the other sites: 60,479 cubic feet vs. 56,542 cubic feet, including federal decontamination and decommissioning wastes.**
Response: Opinion noted. The passage was written before final disposal figures were available from Envirocare and the three regional disposal facilities. The correct percentage was mistakenly omitted prior to printing the draft Plan.

13.6 Analysis of Disposal Technologies and Practices

Public Comments:

13.6A: **Don't understand the difference between disposal "site" and disposal "facility."**
Response: An LLRW disposal "site" is the parcel of land that is occupied by an LLRW "facility." A "facility" includes the land, and all structures, equipment, and improvements pertaining to LLRW storage, treatment, or disposal pursuant to the provisions of Chapter 111H.

13.6B: **It is good that shallow land burial has been outlawed.**
Response: Opinion noted. The drafters of Chapter 111H felt this type of disposal method was inappropriate for use in Massachusetts.

13.6C: **Waste retrievability, monitorability, are good provisions of Chapter 111H.**
Response: The framers of Chapter 111H felt these provisions were important to ensure continued public health, safety, and environmental protection for the citizens and the environment where a site may be identified.

13.6D: **You need a standardized facility design.**

Response: State law authorizes the site community to select the disposal method which best meets community concerns. If the Management Board initiates facility siting, it will provide assistance to all candidate site communities regarding various facility designs.

13.6E: If a facility is built in MA, its design should anticipate future technologies not yet available.
Response: Such a requirement could be incorporated into any facility design. Because of the requirement that LLRW be retrievable from any disposal facility, changes in waste treatment, as well as waste disposal, could be accommodated in the future.

13.6F: Not sure what the various technologies are, and whether they would be modified depending upon the characteristics of a specific site. The public should know more about which technology is appropriate for what kind of site before the Board moves forward.
Response: State law places the responsibility of selecting a disposal method with the site community. However, some technologies may be appropriate for some sites, and not for others. The Management Board, which would provide technical assistance to help the community evaluate different disposal technologies, has identified 10 existing and newly developing disposal methods that in its opinion meet the "retrievability" requirement of state law. Each is described in the Management Plan. They include numerous below-grade structures such as (1) below-ground modular concrete canister disposal; (2) below-ground vaults; (3) mined cavity disposal; and (4) borehole or augered hole disposal; different varieties of above-grade structures such as (5) above-ground vaults; (6) above-ground vaults with earthen cover; (7) above-ground modular canisters; (8) above-ground modular canisters with earthen cover; (9) above-ground vaults with modular canisters; and combinations of various technologies, such as (10) above-ground vaults with steel boxes with earthen mound.

13.6G: An underground facility would be more difficult to monitor for leakage, and is a poor option.
Response: Opinion noted. Were the Management Board to initiate the process of siting an LLRW disposal facility, each candidate site community would be responsible for choosing the disposal facility method at a particular site. Presumably the site community would select disposal technologies that provided them the greatest assurance of public health and environmental protection.

13.6H: Concrete only lasts about 100 years before it begins to crack and crumble. The deteriorating, irradiated concrete would then become LLRW. (+2)
Response: Research on the longevity of concrete has been extensive, and is ongoing. The literature indicates that the factors which degrade concrete (e.g., freeze-thaw damage, sulfate attack, etc.) can all be prevented or mitigated by the proper choice of materials, designs, or operation so that concrete can provide long-term structural stability and serve as a waste isolation barrier for at least 500 years.

13.6I: Consider damage and releases if an airplane crashed into a facility.
Response: Opinion noted. Numerous accident scenarios are evaluated in connection with federal licensing requirements for an LLRW disposal facility.

13.6J: Consider the possibility of an earthquake. (DEP) (+1)
Response: See response to comment 13.6I.

13.7 Cost-Effectiveness of LLRW Disposal Technologies and Practices

[NOTE: Comments in this section are grouped under six subtopics – general comments; generators/radioactive materials users should pay all costs; user fees; cost-effectiveness of a MA-only disposal site; cost-effectiveness of regional disposal facility; and cost-effectiveness of out-of-state disposal.]

Public Comments:

(1) General comments

13.7A: Consider the economic impact of your decisions on the tens of thousands of people who work with radiation materials in Massachusetts.
Response: State law requires the Management Board to "publicize throughout the Commonwealth and to conduct continuing public informational programs on the use of radioactive materials," among other subjects. It also requires the Board to evaluate the economic benefit to the Commonwealth of the "products, services, clinical procedures, and teaching or research activities" that result in LLRW generation. In 1991, as part of its annual survey of radioactive materials users, the Management Board compiled economic data regarding the overall financial impact to the Commonwealth of radioactive materials users. The results indicated that approximately $2 billion in benefit, and over 35,000 jobs, were attributed to that activity.

13.7B: The risk is too great to pay for the cost of failure. We're creating a beast we can't harness.
Response: Opinion noted. There are, indeed, risks in managing LLRW, just as there are risks inherent in managing other types of waste. There are also risks from failing to manage LLRW. Federal law charges Massachusetts and all other states

with the responsibility for managing and disposing of LLRW. In effectuating public policy in this area, risk assessment is an important element in Management Board decision-making.

13.7C: **Facilities are very expensive to build.**
Response: Tables 13-8 through 13-11 identify the estimated costs of construction as well as other phases (i.e., siting, operation, closure, etc.) of three different sized disposal facilities. These estimates were developed using an economic model and various cost factors developed for the DOE's Low-Level Waste Management Program. The model is accepted throughout the LLRW management industry for providing reasonable life-cycle cost estimates.

The cost of siting, designing, constructing, operating, closing, and providing maintenance and monitoring throughout the institutional control period reflects the expenses of complying with federal and state requirements for facility siting, licensure, operations, etc., as well as costs of providing community compensation and impact payments.

13.7D: **The Board should provide information and recommendations as to the true costs, the full costs of a facility with a reduced amount of waste. (+1)**
Response: Employing a combination of the economic model the Board utilized to estimate life-cycle costs for the 35,000, 50,000, 80,000, and 467,000 cubic feet per year disposal facilities (see revised Chapter 13), and a financial risk assessment to approximate the total liability insurance needs for the referenced facility, one could possibly calculate a total of all real and potential future costs, for any size facility.

13.7E: **The hidden costs of a nuclear economy (in health impacts, regulatory expenditures, transportation accidents, management, etc.) are not adequately addressed in the Management Plan.**
Response: Opinion noted. The Management Plan attempted to openly address these issues. However, the Board is not aware of any detailed cost analysis of this kind.

13.7F: **A financially unstable site would be an invitation for environmental problems because the lack of resources would encourage shortcuts and curtailment of monitoring activities.**
Response: Opinion noted. If the Management Board initiates disposal facility siting, the state's LLRW management law will prevent such shortcuts, because the Board, DPH, and representatives of the site community will be responsible for monitoring the facility.

13.7G: **The only way to convince taxpayers to pay for siting is to turn off the faucet – stop producing radioactive waste in the Commonwealth.**
Response: Opinion noted. Several years ago, the Management Board recommended that the costs of siting a disposal facility in Massachusetts should be financed by government bonds in an effort to guarantee an independent and environmentally sound siting process, and to safeguard the 35,000 jobs and other economic benefits produced by businesses, universities, hospitals, biotechnology companies, and other users of radioactive materials in the Commonwealth. The Board's recommendation of bonding any facility siting costs was adopted by the Dukakis and Weld Administrations, and proposals for bond authorizations were submitted to the Legislature for approval. In 1993, Governor Weld continued to propose a bond financing system, but suggested that once an in-state facility becomes operational, (or an out-of-state solution requiring an "entry fee" is negotiated), LLRW generators should repay all bonding expenses. As of the writing of this report, legislation to settle this matter is under consideration in the Legislature.

13.7H: **The state should ensure that a facility is "user friendly" to industry so that MA will be deemed a more competitive place to do business – a major priority in today's economy.**
Response: Opinion noted.

13.7I: **The relatively low cost of rural land in western MA should not be a factor in siting decisions because, seen over the centuries-long lifetime of the site, the price difference becomes meaningless. (DEP)**
Response: The adopted DEP siting criteria regulations do not contain preference criteria related to socio-economic factors and land costs. These were eliminated following public comments.

13.7J: **It's too late to stop the technology. MA has to be responsible for its problems.**
Response: The Management Board has worked steadily to fulfill its statutory goal of "planning and effecting the management of LLRW" and of developing and implementing an LLRW Management Plan whose predominant policy is the protection of public health, safety, and the environment.

13.7K: **Because of limited space at our institution and others, plus the projected costs of radwaste disposal in the future, very few in MA will be able to continue using certain radioactive materials.**
Response: The Management Board is sensitive to the financial concerns expressed by many LLRW generators about the ultimate costs of a long-term solution. The Board is evaluating and comparing the costs of in-state facility siting with those of possible out-of-state solutions, in an effort to better quantify the financial implications of LLRW management for both state government and LLRW generators.

13.7L: **Failure to quickly provide for economical disposal of LLRW could result in continued job loss in the Commonwealth, and Massachusetts generators may not be able to compete with industries in other states. This should be emphasized more.**
Response: See response to 13.7K.

13.7M: **The exact number of jobs that might be at stake within small waste-generating companies should be identified and made public.**
Response: The Management Board will revise the Management Plan to add data about the numbers of jobs related to radioactive materials and LLRW in large and small waste-generating companies.

13.7N: **LLRW management should not include the profit motive. (+1)**
Response: See response to comment 13.7A. In addition, the profit motive is a political reality that has to be considered in most public policy decisions.

(2) Generators/radioactive materials users should pay all costs

13.7O: **The generators should bear all the costs, including the long-term costs in terms of the environment and human health – the true cost, the full cost. Corporations that use radioactive materials should not be allowed to have the state underwrite their profit-making operations. (+56)**
Response: At this writing the Legislature is debating the question of how to fund disposal facility siting (or an "entry" fee for an out-of-state disposal solution). See response to comment 13.7G. All other disposal facility expenses – construction, operation, closure, post-closure, and institutional control costs – have always assumed complete payment by those LLRW generators who would use the facility.

In addition, if a disposal facility is sited, state law establishes an LLRW Trust Fund containing a contingent liability account and an institutional control account. The contingent liability account must be used to pay compensation for injuries to persons, land or property resulting from the management of LLRW. The institutional control account must be used to pay institutional control costs, including the payment of liability claims during that phase of the facility. The law requires the Management Board to annually determine the amount of revenues, to be raised from LLRW generator surcharges, that would be deposited in each account.

13.7P: **I'm only concerned about subsidizing nuclear power, which is not the best nor the most economical way to produce electricity.**
Response: Opinion noted.

13.7Q: **Constraints should be put in place by the public sector, but the costs should be shifted to the producers.**
Response: See responses to comments 13.7G and 13.7O.

13.7R: **The Board is only considering economics, to benefit the four biggest generators. The four largest LLRW generators (Boston Edison, Yankee Atomic, Nuclear Metals, and Dupont) should pay all siting costs, and retain full responsibility for their waste. (+7)**
Response: See responses to comments 13.7G and 13.7O.

13.7S: **Costs of disposal will be passed on to consumers if the LLRW generators have to pay.**
Response: LLRW generators, like other businesses, will find ways to recover their disposal costs, and are likely to pass their increased expenditures on to the consumers who use their products and/or services.

13.7T: **I feel that we are subsidizing the DuPont Co. Dupont can afford to finance waste management; it's not going bankrupt. (+1)**
Response: See responses to comments 13.7G and 13.7O.

13.7U: **I do not support the $45 million dollar public bond (which is likely to cost taxpayers double that amount once interest is paid) for the selection of a radioactive waste site within the Commonwealth, while our towns and cities are in financial crisis. (+3,321)**
Response: See responses to comments 13.7G and 13.7O.

13.7V: **The Management Board should withdraw its recommendation that siting costs should be borne by a capital bond.**
Response: The Management Board's recommendation to finance facility siting through general obligation bonds, funded by all taxpayers of the Commonwealth, is not contained in the funding bill before the Legislature at this writing.

13.7W: **The Board's argument that a government-funded siting process can do a more responsible, environmentally protective job of siting a facility is inconsistent with the Board's current practice of funding its administrative costs through industry assessments. The government can oversee a process without paying for it. (+2)**
Response: Opinion noted. For the funding of the siting process, see responses to comments 13.7G and 13.7O. The present system of industry assessments is a different issue. The Board agrees that government can oversee a process without paying for it.

13.7X: **Management Plan should address procedures and means by which Massachusetts would recoup costs of siting and other costs from generators. A true-cost fee structure should be added to the bond legislation, to make the generators pay the money back. (+1)**
Response: See responses to comments 13.7G and 13.7O.

13.7Y: **Guaranteed payback from generators, and other controls, should be included in the bond legislation so that a facility operator won't have to take out-of-state waste to help meet his expenses.**
Response: The bill before the Legislature at this writing would require facility users to pay back the siting costs. Decisions regarding the acceptance of out-of-state waste into a Massachusetts facility are made by the Management Board, not the facility operator.

13.7Z: **If costs were increased to realistic levels, the use of radioactive materials would decrease, and the amount of waste generated would drop, perhaps to zero. To have the nuclear industry pay less than the true cost is to subsidize them. (+15)**
Response: See responses to comments 13.7D. 13.7G and 13.7O.

13.7AA: **The taxes paid now by the generators are nothing compared to the costs we taxpayers have to pay in health as well as money. (+1)**
Response: Opinion noted. Differences of opinion exist among the public regarding the benefits of radioactive materials use.

13.7BB: **If hospitals had to bear the true, full costs of using radioactive materials, they would use them more responsibly. If it were very expensive, then maybe they would let certain very sick people die, or go back to surgical techniques, and that's OK.**
Response: Opinion noted.

(3) User fees

13.7CC: **Charges and/or taxes to generators should reflect future costs of disposal. (+2)**
Response: See responses to comments 13.7G and 13.7O.

13.7DD: **Fees to generators should be based on the intensity and duration of their LLRW, not only on the volume. (+1)**
Response: The bill to finance disposal facility siting, currently before the Legislature, directs the Management Board to establish regulations for an LLRW generator repayment system. If that bill becomes law, the Management Board will consider several factors in connection with repayment fees, including those suggested.

13.7EE: **I don't mind paying for a MA facility through taxes as a private citizen or through fees on the amount of LLRW I ship to it as a generator. But I object to any system that would impose a fee structure based on the radioactive materials we use which could in principle be sent to the facility.**
Response: The current facility siting proposal under consideration by the Legislature assumes that LLRW generators would repay state bonds once a facility is operational, or once the Commonwealth has entered into an out-of-state disposal agreement. That concept implies that reimbursements to the Commonwealth would be made by those LLRW generators who send waste to the facility, not by those who do not. The same holds true for the fees that would pay for the construction, operation, monitoring, closure, etc., of the facility.

13.7FF: **The Board must ensure that fees, disposal costs, and other charges to MA generators do not become excessive.**
Response: Opinion noted.

13.7GG: **Concerned smaller licensees will have to pay significant sums to fund an LLRW facility.**
Response: See responses to comments 13.7DD and 13.7EE.

13.7HH: **User fees cover roughly one thousandth of the total-life costs of a disposal facility.**
Response: Users fees would be calculated to cover all costs required by state law. Those currently include all costs of facility construction, operation, closure, post-closure, and institutional control. If the bill pending in the Legislature becomes law, fees would also cover the repayment of state bonds used to identify an in-state facility site or to pay an "entry" fee into an out-of-state solution.

(4) Cost-effectiveness of MA-only disposal site

13.7II: **Based on the Board's own projection of disposal volumes, which is questionable, a Massachusetts-only site (less than 50,000 cubic feet per year) would appear to be inherently financially unstable.**
Response: The 50,000 cubic feet per year cost estimates contained in the draft Plan indicate facility user fees ranging from $236 to $258 dollars per cubic foot of waste. These fees are consistent with the estimates of fees expected in other states and regional compacts. As to the accuracy of the Board's projections of disposal volumes, these data are calculated from information supplied by LLRW generators in the Board's annual Classification Survey. As each year's data is received, it is analyzed with previous year's projections, and fine tuned, if necessary.

13.7JJ: **Because a MA facility will not be cost-effective, the state will not have the money to protect the public from it properly.**
Response: There is no indication presented in the draft Management Plan that an in-state disposal facility would not be cost-effective. The Plan identifies the numerous factors relating to cost-effectiveness of various disposal technologies, and cost-effectiveness of disposal within the state versus out of state. If the Management Board decides to site an LLRW disposal facility within Massachusetts, the Board will work to ensure that such a facility is cost-effective.

(5) Cost-effectiveness of regional disposal facility

13.7KK: With the expected drop in the amount of LLRW generated in Massachusetts, no financial institutions would loan a dime for site development or construction costs. The Commonwealth's resources could be better spent seeking to join a regional compact.
Response: Opinion noted. The companies that are planning to construct and operate LLRW disposal facilities in other states have not expressed this view. The Management Board believes that private lending support would, therefore, be available, were it to vote to site a facility in the Commonwealth. The Board has consistently followed a concurrent, two-track approach to LLRW management: (1) negotiating for an out-of-state solution, either through a regional compact or a contractual agreement for LLRW disposal; and (2) planning for the possibility that an in-state facility may be necessary.

13.7LL: Because it's so expensive, we have to have a regional site – face reality.
Response: The Management Plan explains that if the Board decides to initiate in-state facility siting, it will immediately contact other states to ascertain interest in a regional compact with Massachusetts as the first host state. The Board will then evaluate the benefits and disadvantages of regional compacting, and make recommendations to the Governor and the public regarding this option. The Board talks to officials of other states about the possibilities of a regional solution. The Board agrees that there should be a regional facility, but all conversations to date with those outside Massachusetts want Massachusetts to host the first site in the region.

13.7MM: A regional solution would be good for the economy.
Response: Opinion noted.

13.7NN: Compacting with other states for LLRW disposal will lead to cost minimization, and save expenditures that otherwise would be passed on to consumers. (+1)
Response: The Management Board agrees that economies of scale can be achieved through the operation of larger sites. The economics of regional compacting is only one factor to be considered by the Board, however. Others factors include the legal, political, and land area implications of compacting.

(6) Cost-effectiveness of out-of-state disposal

13.7OO: Using out-of-state disposal facilities will prove to be much more cost-effective than an in-state facility.
Response: The Management Plan declares that both in-state and out-of-state solutions will result in higher disposal fees than LLRW generators have incurred in the past. The Management Board cannot assume at this time that an out-of-state solution will always be more cost-effective, given the numerous externalities potentially involved in out-of-state siting. The Board has retained an independent contractor to prepare an economic analysis on the costs of in-state siting versus out-of-state solutions.

13.8 Recommendations to Improve Safety or Efficiency of Disposal

[NOTE: Comments in this section are grouped under six subtopics – general comments; disposal technology; site-selection process; facility operation, closure, post-closure, and institutional control; public health protection; and monitoring.]

Public Comments:

(1) General comments

13.8A: Because of past experience with government, there is no trust that a "safe system" will work.
Response: Opinion noted. If the Management Board initiates disposal facility siting, it's mission will be to ensure that the disposal facility is "safe." One effort to achieve a continued safe site would be through the comprehensive environmental monitoring program required to be established at a facility site. Chapter 111H commands the participation of local officials and citizens from the site community, "and the training of such persons to facilitate their participation." The monitoring program must establish baseline environmental data on the site, provide "early warning" of the magnitude and extent of any radionuclide migration, and provide reliable environmental data throughout facility development, operation, closure, post-closure, and institutional control.

State law also authorizes the local Board of Health of the site community to obtain portions of the samples collected pursuant to the monitoring program for independent analysis.

The public's responsibility, generally, will be to continue monitoring and questioning the actions of the Board, other state agencies, and local citizens' monitoring committees.

13.8B: To say we must build a disposal site to prevent illegal dumping of LLRW is to succumb to extortion – to deliver a payoff to would-be poisoners.
Response: Opinion noted. The Commonwealth is charged by federal law to be responsible for the management and disposal of LLRW. The Management Board and other state agencies are fulfilling that duty.

13.8C: **The NRC is failing to protect workers at Interstate Nuclear Services and other such facilities; we can't trust them to oversee any new site.**
Response: The Management Board is not aware that worker safety is being compromised at this facility. The Board recommends in the Plan that Massachusetts become a full Agreement State, allowing regulatory authority of the NRC over all licenses (except the nuclear-powered utilities) to be assumed by state government. If the Management Board votes to site an in-state disposal facility, and if the Commonwealth receives Agreement State authority -- as is anticipated to occur sometime in 1994 -- it would be the Massachusetts Department of Public Health who would regulate a disposal facility, not the NRC.

(2) Disposal technology

13.8D: **I think the proposed disposal facility technology would be adequate.**
Response: Opinion noted. The Management Plan describes numerous disposal methods which in its opinion meet the "retrievability" requirement of state law. As noted in other responses, the Board would provide assistance to any candidate site community to evaluate the various disposal technologies, since the site community -- not the Board -- must choose the disposal method among those methods certified by the Board.

13.8E: **Nuclear power plants should be closed down because there is no safe disposal technology.**
Response: Opinion noted. The Management Board has no authority to shut down nuclear power plants.

13.8F: **The design of all LLRW disposal facilities should be standardized.**
Response: Opinion noted. Massachusetts law authorizes the site community to select the disposal method which in its opinion best suits the needs of the community and the site. Because disposal technology options must be available to the site community, standardizing facility design would not be possible.

13.8G: **If the Board sites in the state, site selection and development must be state-of-the-art technology, with built-in safeguard redundancy.**
Response: The Management Board is responsible for selecting a "superior" site pursuant to state law, and would utilize the latest technological advances to evaluate potential site areas. The superior site community is responsible for choosing from among disposal technologies certified by the Board.

13.8H: **No current disposal technology could be designed to protect against weather that we cannot predict over the next few hundred years. (DEP)**
Response: Siting criteria proposed by the Massachusetts Department of Environmental Protection include provisions for evaluating those weather conditions that could affect the selection of the site, such as flooding, coastal high hazards, etc. The Management Board believes that disposal methods can be designed to further protect a facility from normal adverse weather conditions. However, the Board recommends in the Management Plan that waste packages should not be placed into disposal units during adverse weather conditions, unless methods are followed to prevent rainwater entry into the units.

13.8I: **Concrete won't offer much protection against significant earthquakes, which are predicted in the Athol area in the next 20 years. (DEP)**
Response: See response to 13.6H.

13.8J: **Even after the facility is built, other methods of disposal must be explored.**
Response: Opinion noted. If the Management Board sites a disposal facility within the Commonwealth, it's role will be to continually monitor facility operations, and to assess emerging disposal technologies for the future. The requirement for waste "retrievability" in any Massachusetts disposal facility would enable the Board to utilize radical, new disposal methods, if a determination were made that such action would be required to enhance public health, safety, and environmental protection.

(3) Site-selection process

13.8K: **To be the safest site possible, the site should be selected only for scientific reasons. (DEP)**
Response: Site selection criteria, developed by the Massachusetts Department of Environmental Protection (DEP), identify 13 fundamental site suitability requirements which must be met for any LLRW site, require the siting regulations to be compatible with the NRC's regulatory program, and dictate that DEP's "primary consideration" is to protect the public health, safety, and the environment.

DEP siting criteria include several that establish fixed distances (setbacks) from water and other environmental resources; determine a site's suitability based on characteristics that measure the Department of Public Health's "performance objectives;" and evaluate geological and hydrological characteristics that would significantly contribute to the LLRW remaining within the site even in the event of an unanticipated release. The majority of the DEP siting criteria are technically based.

13.8L: **We do not have the ability to safely site a dump.** (+2)
Response: State law prohibits the siting of "dumps," also known as "shallow land burial" sites.

13.8M: **If no town accepts siting, then all generators of LLRW should shut down, leave the state, or convert to natural gas.**
Response: Opinion noted. The Management Board has recommended a volunteer process that could identify communities interested in hosting an LLRW facility. If the Board initiates siting, it will conduct a series of public meetings to elaborate the concepts in the volunteer process.

13.8N: **A request by the CEO of a community to voluntarily host a facility should not be sufficient reason to discontinue the normal siting process, without a clear indication of community consensus.**
Response: The volunteer site selection process recommended by the Management Board would only consider volunteer sites that meet all the site suitability criteria of the Department of Environmental Protection. The CEO's willingness would not be enough, and the statewide environmental screening process would not be discontinued.

13.8O: **A facility should not be located near residential, commercial, recreational, or institutional land uses. In order to assure that land around a facility is not developed in the future for one of these incompatible land uses, the Commonwealth should secure easements or restrictive covenants limiting the range of future land uses allowable in surrounding areas. (DEP)**
Response: Opinion noted. If the Management Board voted to site an in-state disposal facility, it would seek to establish a large buffer zone between the waste management area of the site where LLRW would be treated, stored, or disposed of, and neighboring land uses. The Board has determined that at least 100 acres would be needed for a facility receiving waste only from Massachusetts LLRW generators, at least 130 acres for a small regional facility, and at least 420 acres for a large regional facility. The Board would consider acquiring land beyond the site if such land were available and the Board were to deem such acquisition appropriate.

13.8P: **A site should not be chosen where a nuclear facility is already located, because a release of radiation could be masked by the other facility. (DEP)**
Response: Federal and state regulations require that any disposal site be capable of being "characterized, modeled and monitored." Those conditions would require the Management Board to determine whether or not a given site would fail to meet those conditions, if adjacent to a company or institution that uses radioactive materials.

13.8Q: **To prevent the arbitrary skewing of the site selection process for politics or convenience, a draft of the Board's ranking system for the preference criteria should undergo public hearings and several months of public comment before the siting process begins.**
Response: The Department of Environmental Protection's draft regulations on "Application Guidelines and Procedures" allow, but do not require, the Management Board to develop systems that rank and weight preference criteria by assigning numerical or other quantitative values to measure the relative degrees of importance among the different criteria, and to measure the extent to which a particular site satisfies a specific criteria objective. If the Board initiates siting within the Commonwealth, it will hold public meetings and will solicit public comments on any ranking or weighting system.

13.8R: **If there is siting, choose a site that has already been contaminated. We have worked hard to keep our resources clean, and unpolluted rural areas represent a future source of clean water. We have enough contaminated sites. (DEP)** (+3)
Response:
Opinion noted. See response to comment 13.8P.

13.8S: **There will be no candidate sites in affluent communities. (DEP)**
Response: Opinion noted. See responses to comments 13.8K and 13.8P.

13.8T: **The initial sieve for unacceptable locations for an LLRW site (111H, Sections 20a&b) should be expanded to include a "transportation kickout," so that cities and towns which would not be acceptable locations for LLRW disposal due to considerations of transportation safety could go to the sidelines early, and avoid wasting time and money trying to escape from the "siting net." (DEP)**
Response: The DEP siting criteria require that excellent transportation facilities be available to a site, in order to minimize the potential for accidents and for congestion that may cause radioactive materials to spend more time in transit than necessary. The criteria also acknowledge that large construction projects often involve roadway development or improvement, thereby allowing potential site locations to be evaluated not only on the quality of the existing network, but also on their ability to be improved.

The DEP siting criteria include a group of preference criteria using quantitative measures such as distances from major highways, residences and public areas, road density, and accident rates, to enable the Board to evaluate the potential increase in risk related to transportation. These criteria would be part of the review undertaken prior to the issuance of the first land area elimination report (i.e., the Statewide Mapping and Screening Report) and subsequent screening reports, as well.

(4) Facility operation, closure, post-closure, and institutional control

13.8U: **Limit any in-state facility to medical waste having a hazardous life of not more than 50 years.**
Response: Opinion noted. If Massachusetts were to adopt this policy, it would still be responsible for the management and disposal of a major portion of LLRW generated in the Commonwealth, which does not meet this description.

13.8V: **Long-lived radionuclides should not be disposed of in an LLRW disposal facility.**
Response: Opinion noted. The Management Board has a responsibility to manage all LLRW, including the small levels of long-lived radionuclides that exist in the state's LLRW stream. The Board has recommended in its Management Plan that waste in a disposal facility should be segregated by radioactive half-life, to enhance safety and efficiency in any retrieval which may later be required.

13.8W: **Waste should be segregated by half-life in a disposal facility. (+1)**
Response: Agreed. See response to comment 13.8V.

13.8X: **The facility should not be run by a private contractor. A publicly owned and run facility could possibly exclude waste from other states. (+1)**
Response: If the Management Board sites a facility in Massachusetts, the decision to accept LLRW from other states will be made by the Board, not by the facility operator – either initially or later on. Furthermore, Section 38(b) of Chapter 111H requires the facility operator to annually submit waste acceptance criteria for the Board's review. In other words, the Board has the "last say" over waste acceptance.

13.8Y: **Transfer of a facility license should not be allowed unless the prospective new license holder goes through all of the licensing procedures listed in Part M. (DPH)**
Response: State law and DPH regulations identify specific procedures for license transfer. In addition, the Comprehensive Operating Contract executed between the facility operator and the Board stipulates that the Board may "modify or terminate" the contract if it determines that a change in the ownership or control, or in the directors or officers of the operator, may adversely affect the safe development, operation, closure, or post-closure observation and maintenance of the facility.

(5) Public health protection

13.8Z: **If a new facility is built, put public health first, not the expense of making it safe. This has not been done in the case of nuclear power plants, which are sitting time bombs.**
Response: Protecting the public health, safety, and the environment are the cornerstones of the state's LLRW management policy.

13.8AA: **There should be detailed, thorough baseline health studies done for every targeted community. This will eliminate any community that already has high levels of background radiation and will also allow comparisons if there is a future health impact from the facility. (+1) (DPH)**
Response: Chapter 111H does not contain a requirement for baseline health studies for "every targeted community." However, the Department of Public Health licensing regulations contain such a requirement pertaining to the superior site community. Section M.31 of DPH's draft "Part M" licensing and operational regulations for LLRW facilities require a facility operator to submit an environmental monitoring plan, which must include a "preoperational monitoring program" in addition to monitoring during facility "development, construction, operation, closure, and post-closure observation and maintenance (until the facility license is transferred to the Management Board that would oversee the institutional control period).

Section M.31(e) requires the environmental monitoring program to be designed to "... provide data to allow evaluation of facility impacts on public health, safety and the environment...." DPH has indicated that based on comments received at the public hearings, three separate DPH divisions began exploring ways to clarify the language in its draft regulations, to ensure that baseline health studies would be part of the environmental programs of both the facility operator and DPH. The Management Board supports such classification.

The cost of the environmental monitoring programs would be paid, through a fee structure, by those generators using the facility.

13.8BB: **If an in-state facility develops a problem, shut it down and don't think twice.**
Response: Chapter 111H authorizes the Department of Public Health, in consultation with the Management Board, to order a facility temporarily or permanently closed if it finds that "there is a potential hazard to public health, safety, or the environment" which justifies such action. The law also stipulates that any temporarily closed facility shall remain closed as long as necessary for remedial action.

In addition, prior to reopening, DPH must conduct at least one public meeting in the site community on the subject of reopening, and other public meetings in neighboring communities upon the request of the community's chief executive officer. DPH must also issue a summary response to all comments made at such public meetings or made in writing during the time the facility is temporarily closed, and provide an explanation of the reasons for authorizing the reopening.

13.8CC: **Generators should pay for health testing in sited communities every 5 years, and should be responsible for any increased health problems. They should be required to establish an annuity to cover all costs in case they go out of business.**

Response: See response to comment 13.8AA. On the issue of requiring an annuity to cover all costs in case generators go out of business, Chapter 111H mandates that the funds necessary to cover all costs of closing a facility must be set aside by the facility operator.

13.8DD: **Hook up an entire city or town to a new water system, the source of which lies safely outside a very generous potential pollution zone, to enhance public health protection. Siting costs should include such a system.**
Response: Opinion noted. This is another type of community "compensation" issue that can be addressed by the CSC during its negotiations with potential facility operators, and can appear in the Comprehensive Operating Contract.

(6) Monitoring

13.8EE: **It is critical to know exactly what monitoring requirements will be considered, in detail.** (+1)
Response: The details of the monitoring program will depend upon the characteristics of the site and the facility design that is chosen. These details must be submitted to the DPH with other information in a license application. DPH regulations stipulate that both a "DPH environmental monitoring program" and an "operator environmental monitoring program" be conducted. The environmental monitoring program must be conducted both prior to operation, and throughout construction, operation, closure, post-closure, and institutional control phases of a facility. It must include the collection of data about the ecology, meteorology, climate, hydrology, geology (including geophysics and geotechnical engineering), geochemistry, seismology, and radiologic characteristics of the site, as well as other information DPH may require.

13.8FF: **Monitoring of a waste facility for emissions of radiation or radionuclides should be done continuously, real-time, by DPH and local citizens, not just at or by the facility itself. Accept nothing but a zero-error factor in all monitoring.** (+1) **(DPH)**
Response: Chapter 111H requires the DPH to establish a "comprehensive environmental monitoring program" at the facility site within 30 days of the issuance of a facility license. The law requires DPH to consult with DEP, and the local Board of Health. The monitoring program must employ the best available monitoring technology and provide for the participation of officials and citizens of the site community, as well as training for those citizens to participate.

The monitoring program is required to establish baseline environmental data on the site; to determine compliance with applicable regulations, with conditions of the facility license, and with terms of the Comprehensive Operating Contract; to provide early warning of the magnitude and extent of any radionuclide migration; and to provide reliable environmental data throughout all the phases of the facility, starting with development.

In addition, the local Board of Health of a site community is authorized to obtain portions of the samples collected in the environmental monitoring program for independent analysis.

13.8GG: **Monitoring technology must be able to detect radiation leakage at and around the site.**
Response: Agreed. Provisions for such monitoring appear in the DPH licensing and operational regulations.

13.8HH: **Thirty years from now, you people won't be there to make sure nothing goes wrong. It is questionable whether monitoring can continue for hundreds of years. The budget could be cut in the future, and then monitoring could stop, or the site might even go unregulated. (+2) (DPH)**
Response: Although it would not be the same individuals, the Management Board would be present to monitor the operation of any LLRW disposal facility. Monitoring would continue; community oversight would continue; the DPH regulatory authority would be maintained.

13.8II: **Disposal facilities should be grouped for easier, safer, less expensive long-term monitoring. (DEP)**
Response: Opinion noted.

13.8JJ: **With the nuclear industry being decimated, the industry will be hard-pressed to find people with the knowledge and expertise they have today, to watch after the facility.**
Response: One of the primary reasons the federal government has assigned LLRW disposal facility responsibility to the states is the fact that state government is expected to endure (along with the federal government), when other entities are gone. State government will exist to ensure that facility maintenance and monitoring continues as intended.

Chapter 14: Decommissioning Applies to More Than Power Plants

14.2 Decommissioning Defined

Public Comments:

14.2A: **The Plan does not distinguish between sites which were previously decommissioned and sites which are undergoing decommissioning for the first time. Nor does it acknowledge that remediation sites are atypical "generators" of LLRW and**

mixed waste. Waste from remediation sites is not being generated currently, but is due to previous activities, which may have ceased years or even decades ago.
Response: The discussion in the text of Sections 14.2 and 14.3 and in Tables 14-1 and 14-2 appears to address these issues either directly or indirectly. However, a statement will be added noting that remediation of old sites is not believed to be associated with illegal disposal operations, nor are these non-routine occurrences expected to continue with any significant frequency or impact in the future.

14.2B: **Sites where NRC or AEC licenses were legally terminated should be appropriately denoted as "re-decommissioning" sites.**
Response: The sites described in Chapter 14 represent various reasons for decommissioning, including remediation of previously accepted decommissionings and continuation or acceleration of planned decommissionings. The Board believes that the descriptive material provided in Section 14.2 represents these projects more thoroughly than assigning them to a particular category.

14.2C: **Page 14-4: The first sentence in paragraph 2 may be misleading: "Decommissioning may not be able to be completed at the Rowe plant for perhaps a decade or more, as no disposal facilities exist for the spent fuel wastes present at the power plant site." This implies that an LLRW disposal site is not needed to support Yankee Rowe decommissioning until after a HLW disposal site is available. Although final phases of decommissioning and license termination may be delayed, significant LLRW shipments could occur from Yankee Rowe if an LLRW disposal site is available. Earlier LLRW disposal site availability reduces overall decommissioning costs for the consumer.**
Response: The second sentence of the paragraph will be revised to read as follows: "Although most of the nuclear reactor components and other facilities can be 'removed safely from service' and shipped to an LLRW disposal site, the entire property cannot be released 'for unrestricted use' unless the spent fuel waste can be removed."

14.2D: **Page 14-4: The last sentence of paragraph 2 is inaccurate. It reads: "Such an option would be very costly and of questionable environmental value for the utility company, therefore the choice of on-site storage for spent fuel is expected." It is not obvious that off-site storage of spent fuel would be prohibitively expensive if an acceptable situation could be identified. It is not clear what the Board means by "questionable environmental value."**
Response: The sentence will be changed to read, "Although off-site spent fuel storage options may become available in the future, it is expected that spent fuel from the reactor will be stored on site for some period of time."

14.3 Old Burial Sites

Public Comments:

14.3A: **The Draft Management Plan does not mention an old LLRW burial site in Worcester, under a highway. This site included some uranium-235 from nuclear power plant fuel reprocessing by the Norton Company. Were other sites left off the list? It would be good to have a complete list of burial sites in the Management Plan.**
Response: This section of the plan addresses only those sites with decommissioning plans or programs. An inventory of "old burial sites" in Massachusetts also is included In Section 13.4. Although brief mention of the Norton site is made in that section (by location only), the site will be listed with the others, and will also be mentioned In Chapter 14.

14.3B: **Board should better address plans to provide for storage, treatment, and disposal capacity required in remediating known sites, including previously NRC-decommissioned sites, and new sites, if discovered.**
Response: Some of the sites identified in the Management Plan have been, or are in the process of being, remediated. These include the Texas Instruments site and the two sites at the Watertown Arsenal. Waste from these facilities has been or will be shipped In the near future to existing disposal facilities. The Nuclear Metals facility holding basin may be remediated through a recovery and recycle process. In addition, any waste from this facility and the remaining facilities Identified is expected to be low-radioactivity bulk solids that are likely to be shipped to the Envirocare disposal facility in Utah, regardless of the availability of other LLRW disposal facilities.

In any event, the preliminary sizing estimates for a Massachusetts facility (discussed briefly in Chapter 15 of the Management Plan) include provisions for decommissioning of various facilities such as these.

14.3C: **It may not be possible or feasible for contaminated sites undergoing decommissioning to store LLRW on-site for up to five years, because the volume may be too large. Furthermore, these sites may also contain mixed waste, which cannot be stored on site legally.**
Response: See response to 14.3B.

14.3D: **Page 14-8, Table 14-2: The third sentence states that "some uranium and thorium scrap metal and equipment were buried on site." This should be replaced by: "Some materials were buried on site which were contaminated with low levels of uranium and thorium. Consequently, they are classified as low-level contaminated material."**
Response: The Board agrees with the recommended wording change, and the Management Plan will be revised accordingly.

14.3E: **Page 14-8, Table 14-2: The fourth sentence states "groundwater monitoring in 1983 indicated no radiation levels above background, but no recent data is available." This statement should read: "Groundwater monitoring has indicated no**

radiation levels above background, data has been gathered in 1983 as well as during a number of sampling sessions during 1993. In all cases, no radiation levels above background have been found in groundwater."
Response: The Board agrees with the recommended wording change, and the Management Plan will be revised accordingly.

14.3F: **Page 14-8, Table 14-2: The seventh sentence states "without this acknowledgement, the final decommissioning of the TI site is not resolved." This is not correct and should be removed...as TI stated to NRC, they have no record of disposal at the Shpack landfill. Site has been listed on National Priority List as Superfund site and listed for clean-up under Formally Utilized Sites Remedial Action Program (FUSRAP). Government is responsible for clean-up. A number of Potentially Responsible Parties have agreed and are performing remedial investigation on site.**
Response: Because the NRC has given the Management Board a different account of the status of its final decommissioning determination, the Board will modify the language in this table to note the differing views of Texas Instruments and the NRC.

14.3G: **Page 14-8, Table 14-2: In eighth sentence it states "In the fall of 1992, at the urging of the Low-Level Radioactive Waste Management Board, TI decided to remove the contamination..." Recommendation is true, however, TI regards itself as a conscientious and environmentally concerned corp. Contends that removal was unnecessary, but agreed to removal to terminate NRC Spec. Nuclear Materials License it no longer needed. TI believes Feds should share in the responsibility for clean-up.**
Response: The table will be revised to reflect the current status of the site, including the removal and disposal of slightly contaminated materials.

14.3H: **Page 14-8, Table 14-2: In ninth and last sentence, it states "Approx. 55,000 cu. ft. was shipped for disposal to Envirocare in Utah." Number should be changed to 65,000 cu. ft. to reflect the entire amount removed during remediation in 1992 and 1993. Remediation has been completed.**
Response: See response to comment 14.3G.

14.4 Decommissioning Methods

Public Comments:

14.4A: **Page 14-7: The last sentence should be reworded. It currently reads: "In addition, greater costs and larger amounts of radioactive waste result from this method because little or no waste has been stored for decay to reduce the level of decommissioning activity." DECON will not cost more than the SAFSTOR option when the total cost of decommissioning is considered. SAFSTOR plant monitoring costs can be significant, offsetting any additional waste disposal costs from the DECON options. Yankee recommends the following substitute sentence: "In addition, larger amounts of radioactive waste result from this method because little or no waste has been stored for decay to reduce the level of radioactivity."**
Response: The reference in the draft Plan to "greater costs" comes from NRC studies listed in the Chapter References. However, because the primary purpose of the sentence was intended to point out that larger volumes of LLRW result from the DECON method, the Management Board will modify the Management Plan accordingly.

14.4B: **Page 14-9, paragraph 2: The sentence "Such surveillance and security may be accomplished through the use of part-time staff and full-time electronic equipment" is not applicable to SAFSTOR at a nuclear power plant with nuclear fuel on site, and should be modified.**
Response: The sentence will be modified by inserting the following phrase after "equipment: "...although the presence of stored spent nuclear fuel will require greater security measures."

14.4C: **Page 14-11: A paragraph should be added that presents the conclusions from the Generic Environmental Impact Statement (GEIS) on decommissioning and decommissioning alternatives. In the GEIS, the NRC concluded the following:**
- **The environmental impact of decommissioning nuclear facilities is similar to or less than those during construction and operation;**
- **Both DECON and SAFSTOR are reasonable alternatives for decommissioning light water power reactors;**
- **The occupational exposure for DECON is higher than for SAFSTOR, but similar to routine operation.**
- **The higher DECON operational exposure has marginal significance to health and safety; and**
- **The LLRW disposal volume is typically less for SAFSTOR than DECON due to the decay of radioactivity from the time the plant shuts down until final dismantlement begins. This benefit is not uniquely compelling when selecting a decommissioning alternative.**

Response: All of these NRC conclusions are mentioned in this chapter (e.g., see pages 14-7,14-9,14-11, 14-22). However, the narrative will be revised to give them more emphasis and provide greater clarity.

14.5 Decommissioning Regulations

Public Comments:

14.5A: **There are critical differences between remediation sites and other LLRW "generators." Public policies favoring remediation are implicated at decommissioning and re-decommissioning sites, and the Plan should account for and not hinder these**

public policies. Board and agencies should avoid enacting regulations and policies which conflict with federal regulations or exceed the authority delegated by the Legislature. MA should analyze what authority, if any, it has over former licensees and/or site owners of sites for which licenses were legally and properly terminated.
Response: The Management Board does not assume responsibility for, nor is it authorized to regulate, the decommissioning of nuclear facilities. The Board maintains an interest in decommissioning insofar as it produces LLRW, whose management in the Commonwealth is the Board's responsibility. The Commonwealth can get involved through the 21E program if there is a release on a site.

14.5B: **The Board, DEP, and DPH should keep in mind that the federal agencies may set in motion legally mandated processes that prescribe the actions which site owners or operators must take. The Board, DEP, and DPH should not create duplicative or conflicting regulations for sites undergoing decommissioning now.**
Response: It is not the intent of Massachusetts state agencies to duplicate federal processes and regulations regarding decommissioning.

14.5C: **Page 14-14: A portion of paragraph 3 under "Funding Plans for Utility Power Plant Decommissioning" should be deleted. A discussion of minimum funding requirements relative to Yankee or Pilgrim actual fund requirements is not relevant to LLRW disposal issues. In addition, the total decommissioning cost estimates or expenditures have little or no bearing on LLRW disposal cost, facilities, or planning. Paragraph 4 adds no useful data for the Plan, and should be deleted. The premise of paragraph 5, "because of the substantial nuclear-powered utility facility decommissioning costs...." is flawed. the magnitude of costs is not at issue. The mechanisms of collection of monies for these activities are separate. This paragraph (if corrected) adds little and should be deleted.**
Response: While the Board monitors decommissioning costs informally, the state Department of Public Utilities has the formal role. The discussion on decommissioning is included in the Management Plan to illuminate an issue that is likely to have a significant impact on the management of LLRW. Financial surety associated with decommissioning is relevant in that sufficient funds must be available to cover waste management activities, as well as other decommissioning activities. The Management Board believes this to be directly relevant to the Board's responsibilities and believes that the discussion in the Management Plan is appropriate and should be retained.

Regarding paragraph 5, the Board agrees with the assessment that the premise of sentence one is incorrect and will revise the Management Plan language appropriately.

14.5D: **Page 14-17: The last two paragraphs of section 14.5 should be deleted, as they are not relevant to the impact of decommissioning on LLRW disposal issues.**
Response: Opinion noted. The Board stands by its belief that the decommissioning of a nuclear-powered electric plant is a more significant action than the decommissioning of other types of radioactive material users' facilities. The last paragraph of this section was included to provide information about the NRC's rules for inspecting decommissioning documents and petitioning the NRC to become an "intervenor" party. The Board believes it is appropriate for this type of public information to be included in the Plan, since decommissioning relates to state policy decisions about LLRW management.

14.6 Waste Management Implications and Recommendations Regarding Decommissioning

[NOTE: Comments on this section are grouped under three subcategories – general comments; old burial sites; and power plant decommissioning.]

Public Comments:

(1) General comments

14.6A: **Lower fees for disposal of LLRW and mixed waste would support the public policy encouraging waste minimization. High disposal fees are not an applicable argument to encourage waste minimization for decommissioning sites undergoing remediation.**
Response: Opinion noted.

14.6B: **Decommissioning smaller plants may be more difficult. Some labs are in buildings that they don't even have the plans for. Some may be discharging into a sewer system.**
Response: Opinion noted. The NRC or state agencies have control over regulations governing decommissioning of radioactive materials users, as well as control over discharge to sewer systems.

14.6C: **Board should consider how any decision to site storage, treatment, or disposal facilities will affect sites which need remediation as part of decommissioning. Potential volume should also be considered; also sites which may later be discovered. Board should arrange for availability of storage or disposal space in-state or out-of-state as available short-term option.**
Response: The Board has encouraged those entities who are in the process of remediating various sites to make arrangements for out-of-state disposal for the foreseeable future. The Board does not intend to provide interim storage facilities for LLRW at this time, nor does it believe that such capacity is required in the near future. Also, see response to 14.3B.

14.6D: **Board should consider the possibility that mixed waste may be encountered during decommissioning and the possibility that the lead regulatory agency may order removal of the waste from site. (+1)**

Response: The Board recognizes that mixed waste may be encountered, and in fact, has been encountered, in remediating sites. The extent to which this may complicate remediation efforts will be a function of the particular type of mixed waste and the available treatment and disposal options available at the time. Although limited mixed waste treatment and storage options are presently available, additional out-of-state treatment capacity is anticipated. The Board does not believe the possibility of encountering mixed waste in a remediation campaign is inconsistent with the Management Plan, Board policies, or proposed actions for LLRW. The Plan will include some discussion of potential on-site storage problems at old burial sites that are undergoing decommissioning.

14.6E: **Pages 14-19 - 14-21: Several subsections are not relevant to the topic of the impact of decommissioning on LLRW disposal. They include: "Impact from Insufficient Decommissioning Funds," "Impacts from Waste Handling," Impacts from Interim Storage during Decommissioning," "Impacts from Radiation Dose to Workers and the Public," and "Impacts on the Environment." These sections should either be deleted or included in a separate document that presents the Management Board's concerns regarding decommissioning, or be modified to focus on the impact of decommissioning on LLRW disposal. If the Board has comments regarding decommissioning, it should present them separately to the appropriate agencies.**

Response: The Board recognizes that its mission is the responsible management of LLRW. However, the many issues surrounding decommissioning potentially affect the Board's planning and decision-making processes regarding LLRW (e.g., facility sizing; funding mechanisms and financially responsible parties after an organization terminates operation or goes out of business; timing of decommissioning waste shipments relative to site availability; etc.). For this reason, the cited sections will remain in the revised Plan. Some of the issues identified in the comment are more fully covered in other chapters, and references to the appropriate chapters will be added to Chapter 14.

(2) Old burial sites

14.6F: **Management Plan should delineate the difference between allowable radiation from a disposal facility and from a decommissioned facility.**

Response: The levels of allowable radiation, as regulated by the NRC and the DPH, at a decommissioned site are addressed in Section 14.2, and the allowable radiation exposures from a disposal facility are covered in Chapters 3 and 13.

14.6G: **The Board should recognize the special storage, treatment, and disposal needs of old contaminated sites, including re-decommissioning sites, and work to ensure that disposal or storage capacity is available, whether in state or out of state, so that these sites can be cleaned up.**

Response: See response to 14.3B.

14.6H: **The Board should choose a management option which will ensure continuous access to storage, treatment, and disposal facilities, either in state or out of state, whether permanent or temporary, so that contaminated sites can be remediated.**

Response: The Board is striving to maintain continuing disposal options for all LLRW. See response to 14.3B.

(3) Power plant decommissioning

14.6I: **Closed reactors can decay on site to achieve at least a 90-percent reduction in radioactivity.**

Response: Delayed decommissioning options and the advantages of radioactive decay are addressed in Section 14.4 of the Management Plan.

14.6J: **Since there is no HLW repository and the HLW will have to be stored on site, the SAFESTOR decommissioning method should be used by Yankee and Pilgrim instead of DECON. If SAFESTOR is used, other states would be less hesitant to take MA waste. (+1)**

Response: Yankee Atomic Electric Company has elected to implement a modified DECON program for decommissioning of Yankee Rowe, pending NRC approval of its decommissioning plan. The Board has no regulatory authority over this decision or its implementation.

14.6K: **The fact that Yankee Rowe is being decommissioned should not be a factor in deciding whether to compact or go it alone, since the additional volume is not significant when compared to MA's overall LLRW generation over the period of a disposal site's operation.**

Response: The Board will weigh all relevant factors In proceeding with the LLRW management program in Massachusetts. However, if a decision is made to site a facility, decommissioning wastes are unlikely to influence a decision on whether to go it alone or to compact.

14.6L: **Using the SAFSTOR method, after 50 years the volume of LLRW from Yankee Rowe would be only 1800 cubic meters – a whole order of magnitude less than the 18,000 cubic meters generated under the DECON method. (See Table 7.8 from NUREG 1437, Vol. I.).**

Response: Delayed decommissioning options and the advantages of radioactive decay are addressed in Section 14.4 of the Management Plan.

14.6M: **Page 14-18: Paragraph 2 figures regarding Yankee Rowe decommissioning should be updated to reflect the component removal project. Suggested rewording: "Decommissioning activities at the Rowe plant are estimated by Yankee Atomic Electric Company to generate approximately 95,000 cubic feet of LLRW containing approximately 192,000 curies. This volume and activity is broken down as follows:**
- **92,600 cubic feet of Class A, containing 3,400 curies;**
- **1,000 cubic feet of Class B, containing 10,900 curies;**
- **1,300 cubic feet of Class C, containing 177,900 curies.**

Yankee is currently executing a project to dispose of several plant components, reducing the waste value to about 80,000 cubic feet of LLRW containing less than 10,000 curies."
Response: The draft Management Plan reflected data previously provided by Yankee. The Plan will be revised as suggested to reflect the more current data. The Management Plan is a "living document," which will be re-evaluated continually.

14.6N: **Please encourage the NRC to reconsider its intention to allow early component removal at Yankee Rowe. If they go through with it, Yankee Rowe is well on its way to DECON, which will generate much more LLRW.** (+2)
Response: The Management Board has no objection to Yankee's plans to remove LLRW from the site and ship it to a licensed disposal facility. Also, see response to comment 14.6I.

14.6O: **Since the Component Removal Project (CRP), which will be completed before Yankee Atomic presents its decommissioning plan next October [1993], will effectively remove 90 percent of the residual radioactivity from the site, it has significant waste management impacts, specifically in the area of LLRW reduction requirements. I urge you to intervene with the NRC for the purpose of holding a hearing to examine this issue.**
Response: See response to 14.6N.

14.6P: **Page 14-23: Paragraph 2 should be deleted, as it is not relevant to the impact of decommissioning on LLRW disposal.**
Response: The Management Board supports the statement that, "Because the issue of an environmental impact statement is of considerable concern to many of the Commonwealth's citizens, the Commonwealth should consider whether such an environmental impact study is necessary, and communicate its view to the NRC in a timely fashion."

Chapter 15: The Need for Storage, Treatment and Disposal Facilities

Background:

Low-level radioactive waste that is generated each year as a by-product of various academic, medical, commercial and nuclear-powered utility activities requires storage, treatment, and/or disposal to ensure safe waste management. For that portion of the LLRW which cannot be safely managed at the site of generation, storage, treatment, and disposal facilities are necessary. Massachusetts LLRW producers have utilized such facilities located throughout the country.

Two commercial LLRW disposal facilities are available to Massachusetts generators. One, the LLRW disposal site at Barnwell, South Carolina, is controlled by the Southeast Compact Commission – a regional compact of eight southern states, and by the State of South Carolina, which has decided to close the Barnwell site to out-of-compact region generators after June 30, 1994. The second site, a privately operated landfill in Clive, Utah, accepts only certain types of high-volume/low-radioactivity LLRW, such as radioactively contaminated soils and building debris. Because of license restrictions, the Utah site cannot handle the disposal of most of the LLRW generated in the Commonwealth and the rest of the country, however.

Due to the LLRW disposal crisis emerging in Massachusetts and other states that will not have disposal facilities available by July, 1994, LLRW will have to be stored on site. This option is only a short-term solution to the Commonwealth's LLRW management problem, however, because the NRC, which licenses radioactive materials use, does not encourage storage, and has indicated it will not allow on-site storage for more than five years.

Because on-site storage is feasible for Massachusetts LLRW generators (even for only the short term of five years), there is no need for the Management Board to develop a centralized storage facility in Massachusetts at the present time. However, such an interim storage facility may be appropriate if Massachusetts were able to arrange to have another state or compact region accept Massachusetts LLRW at some future date within the period that the interim facility would operate.

Like storage, some LLRW treatment activities can occur on site where LLRW is generated. One of the most-used on-site treatment processes is storage for decay. However, much of the LLRW treatment is conducted off site, at one commercial treatment facility located in Massachusetts (Interstate Nuclear Services, Inc., in Springfield) and at numerous commercial operations in other states.

As long as LLRW treatment continues to be available to Massachusetts generators, there is no need for the Management Board to establish an in-state LLRW treatment facility. In the case of "mixed" waste, i.e., LLRW that is contaminated by or exhibits the characteristics of toxic, chemical "hazardous" waste, permits required by the EPA have slowed the availability of mixed waste treatment. However, new treatment companies are emerging, and are receiving permits to treat a number of types, although not all types, of this small portion of the LLRW stream.

As noted, LLRW disposal options are more problematic than those for storage or treatment. With the pending loss of access to the Southeast Compact Commission's site in Barnwell, South Carolina, and the limits on disposal imposed at the Envirocare site in Clive, Utah, there is a need for a centralized LLRW disposal facility to manage Massachusetts LLRW. That need could be satisfied if another state or regional compact currently developing new LLRW disposal facilities were to provide access to Massachusetts generators. At the present time, no such promise is available. All states and compacts that are developing disposal capacity have either laws or official policies against accepting out-of-state (or region) waste. Unless and until those policies or laws are modified, Massachusetts cannot gain access to any newly developing out-of-state disposal site.

15.1 Introduction

Public Comments:

15.1A: **Page 15-1 (footnote 1): Characterizing the volume disposed of in Clive, Utah, as "a few cubic feet" is incorrect. During 1991, 7,450 cubic feet of LLRW were shipped to Envirocare; in 1992, 60,479 cubic feet were shipped to this site, of which 54,719 cubic feet were the result of a one-time commercial decommissioning project.**
Response: At the time this part of the draft Management Plan was written, the volume of LLRW shipped to Envirocare was very low. Since then, disposal of LLRW and mixed waste has increased at the Clive, Utah, disposal site. The revised Plan will reflect the latest disposal data available.

15.1B: **Discussions regarding progress of various states and compacts should be updated to reflect current status.**
Response: All such discussions will be updated as appropriate.

15.1C: **Before a decision is made to pursue an in-state site, issues pertaining to potential political, legal, and financial difficulties must be fully evaluated and factored into any conclusions about the feasibility and cost of a facility. It is vital to determine the cost of an in-state site and the disposal costs to the generators, to avoid the risk of building a repository no MA generator can afford.**
Response: The Management Plan examines these issues in Chapters 13, 14, and 15. The revised Plan will discuss the cost-effectiveness of in-state versus out-of-state siting options, and will compare the life-cycle costs of four different-sized in-state disposal facilities. In addition, the Management Board is having an economic analysis of in-state and out-of-state costs conducted by an independent consultant, prior to any decision on siting.

15.3 Availability of LLRW Treatment Facilities

Public Comments:

15.3A: **Pages 15-6 to 15-7: The Management Plan points out that Tennessee originally required a certification by the Governor of a state of generation that return of waste processed in Tennessee to its state of origin would be permitted. It was subsequently called to the attention of the Tennessee Department of Health and Environment that states not affiliated with compacts (like MA) are barred by the U.S. Constitution from interfering with the movement of goods in interstate commerce. Since such states lack the authority to prevent return shipment, their certification that they would not do so is superfluous. The certification requirement for non-aligned states has not been subsequently enforced.**
Response: In the Low-Level Radioactive Waste Policy Amendments Act, Congress expressed its policy that the states should be responsible for the disposal of LLRW. Massachusetts has exercised this responsibility by enacting Chapter 111H, the Low-Level Radioactive Waste Management Act, which confers upon the Management Board the responsibility for "planning and effecting the management of low-level radioactive waste in the Commonwealth...." This statutory framework clearly vests responsibility in the Board to adopt policies and procedures necessary for LLRW management.

The policy that the Board has promulgated to deal with the situation in which Massachusetts generators may lose access to the existing disposal sites represents a valid exercise of its statutory authority under Chapter 111H, and of the Commonwealth's responsibility for the management of LLRW, explicitly recognized by the federal Act.

The principal effect of the Board's policy is to deny automatic re-entry (in favor of a case-by-case review) to waste that fails to satisfy the waste acceptance criteria imposed pursuant to the generator's contract with waste processors. The policy serves a legitimate local purpose, and does not discriminate against out-of-state waste. Nor does it unduly burden interstate commerce. Also, because of the explicit recognition by the federal government of the state's authority, the policy cannot be said to be pre-empted by federal law. Therefore, the policy is within the power of the Board to adopt, and does not violate either the Supremacy Clause or the Commerce Clause of the U.S. Constitution. Such limited exercises of the state's police power have been upheld in the courts in the face of constitutional challenges.

15.5 Future Capacity at the Proposed New LLRW Disposal Facilities

Public Comments:

15.5A: **Massachusetts should not serve as the conscience of other states that may build less environmentally suitable facilities, and thus should not refuse to use these facilities, if available.**
Response: Opinion noted. Massachusetts officials have been meeting with all states that are in the process of developing LLRW disposal facilities, both as regional and single-state sites, to keep communications open and to express the Commonwealth's interest in out-of-state disposal solutions. While some of these states are employing a disposal method that is not acceptable under Massachusetts law (i.e., shallow land burial), the Commonwealth has continued to express its interest in all potential out-of-state disposal options, aware that the geological characteristics are different for each state involved in siting.

15.5B: **Board's model for predicting need for disposal space should incorporate disposal capacity required for remediation of sites where decommissioning may require removal of large amounts of LLRW and mixed waste.**
Response: Some of the sites identified in the Management Plan have been, or are in the process of being, remediated. These include the Texas Instruments site and the sites at the Watertown Arsenal. Waste from these facilities has been or will be shipped in the near future to existing disposal facilities. The Nuclear Metals facility holding basin may be remediated through a recovery and recycle process. In addition, any waste from this facility and the remaining facilities identified is expected to be low-radioactivity bulk solids that are likely to be shipped to the Envirocare disposal facility in Utah, regardless of the availability of other LLRW disposal facilities.

In any event, the preliminary sizing estimates for a Massachusetts facility (discussed in VOLUME II, Chapter 15 of the Management Plan) include provisions for decommissioning of various facilities such as these.

15.6 Projections of Future LLRW Generation and Availability to Meet Future Management Needs

15.6A: **Page 15-29: These sentences in paragraph 3 seems to exaggerate the uniqueness of MA waste: "The major portion of LLRW generated nationally results from the production of electricity by nuclear-powered utilities. However, this is not the case in MA, where utility-generated LLRW, on average, accounted for approximately 30 percent of the waste shipped for disposal in 1989, 35 percent in 1990, and 42.5 percent in 1991" Actually, these proportions are very close to the national average, which was 595,359 cubic feet of 1,699,564 cubic feet, or 35 percent in 1992, as reported in The Radioactive Exchange.**
Response: According to DOE records, the percentage of total volume of LLRW shipped by the utilities has dropped in the last two years (1991 and 1992). The portion shipped by the utility companies in 1991 was 47 percent and in 1992 it was 35 percent. A 13-year average reveals that the utility share of shipped waste by volume was 56 percent, which was also the percent shipped by the utilities as recently as 1990.

In 1992, the volume percent contributed by the utilities in Massachusetts, after deducting one-time remediation waste volumes, was 42 percent.

Although the long-term historical data for the national LLRW waste stream indicates a typically larger proportion of waste volume coming from the nuclear utility sector, recent data seem to indicate that effective volume minimization efforts by the utilities have reduced their contribution to well below 50 percent. Recent levels are comparable to the percent contribution by Massachusetts utilities, based on 1992 data. The results will vary somewhat yearly, but it is likely that the trend to smaller volumes from the utilities will continue. In addition, routine shipment from the Yankee plant will cease in the near future because of its decommissioning status.

Given these recent trends, the Management Board will revise the Management Plan accordingly.

15.6B: **Page 15-29: The second to the last paragraph should be updated to reflect the fact that shipments from Yankee's decommissioning activities are going to Barnwell in 1993 and 1994. The shipment schedule is dependent upon the availability of LLRW disposal capacity.**
Response: The following statement will be added to the end of the paragraph: "However, some wastes from a component-removal project are being shipped during 1993 and 1994, in order to take advantage of the available disposal site at Barnwell. Shipping that waste should reduce Yankee's total decommissioning LLRW to 80,000 cubic feet and 10,000 curies.

15.6C: **It is improper and misleading to include past or future volumes of LLRW that can be sent to the Envirocare site in portraying the quantities of waste with which the state must cope or in estimating the economics of a MA-only disposal site.**
Response: It is not clear that access to the Envirocare facility in Utah will continue for the indefinite future. In addition, most of the waste assumed to make up the projected volumes for Massachusetts would not be suitable for disposal at that facility. The economics of a Massachusetts only disposal site have been based on estimates of LLRW volumes that would be likely to be suitable for disposal at a Massachusetts facility. Also see response to comment 15.6F.

15.6D: **The Board includes future decontamination and decommissioning waste estimates in calculations of ultimate disposal site capacity, but correctly excludes decommissioning wastes from annual volume projections. This is because they are by definition "one time," non-recurring volumes, and since they signal the termination of licensed activities, they usually presage some decrease in the overall volume of regularly generated wastes.**
Response: Comment noted. Also, see response to comment 15.6F.

15.6E: **When appropriate corrections are made to actual annual statewide disposal volumes, it is apparent that the Management Board has historically overestimated volumes.**
Response: See response to comment 15.6F.

15.6F: **It is clear from the data that even the Management Board's short term (one- and two-year) projections are prone to serious error. Longer range estimates are correspondingly even more suspect. The overall trend in annual disposal volume for MA since 1982 has been one of dramatic decrease, as shown by Sec. 15-D of the Plan. The exceptions (minor increases) in 1984 and 1989 reflect the elimination of backlogged waste in anticipation of significant price or disposal surcharge increases. There has been a strong positive correlation between increasing disposal cost and decreasing volume. The one effect that over 10 years of data does not demonstrate is that disposal volumes will begin to rise. Because conservative projections based on the Board's model must involve low annual volumes to assess "worst case" user fees and revenues, the least conservative credible projection, stabilization of volumes with no further reduction, would be based on future generation at the 1992 level of 24,000 cubic feet. Future volume reduction should be anticipated at the Board's estimated future disposal cost levels. Reported disposal data through May, 1993, annualize to a volume of only 8,236 cubic feet, excluding federal D&D waste.**
Response: The smallest facility projected for economic assessments assumed an average input of 35,000 cubic feet per year for 30 years of operation plus an additional 450,000 cubic feet of decommissioning waste from various facilities. These assumptions yielded an annualized volume of 50,000 cubic feet. These figures appeared to be reasonable, based on information available to the Board at the time the analysis was performed.

With the Yankee Rowe reactor facility off line, and waste minimization and volume reduction trends continuing, annual LLRW volumes have continued to decrease for typical waste streams (e.g., exclusive of remediation and decommissioning wastes). It is possible that further decreases may occur in response to economic pressures, a lack of disposal capacity, and storage costs.

However, other factors such as an increase in the use of radioactive materials could have an opposite effect. Also, various planned and unplanned remediation programs and major facility modifications or maintenance events at licensee facilities that are likely to occur during the life of a disposal facility would yield average annual volumes that are higher than would be predicted from recent historical data.

Although these offsetting factors may serve to increase volumes somewhat, it is likely that a continued net decrease in volumes will result. Therefore, the Board is revising the lower volume estimate used for the Massachusetts-only facility for purposes of calculating land requirements and user disposal fees. The minimum annual volume of typical LLRW that will be used for a Massachusetts-only facility will be 20,000 cubic feet. Previous decommissioning waste volume estimates (450,000 cubic feet) will be added to these annual volumes projected for typical wastes, resulting in an average annualized volume of 35,000 cubic feet. These estimates and projections will be revisited periodically if new data suggest that significant impacts to the calculations might result.

15.7 The Need for Additional Facility Capacity

[NOTE: Comments in this section are grouped under three subtopics – general comments, storage, and disposal.]

Public Comments:

(1) General comments

15.7A: **There is a need because radioactive materials use helps the economy.**
Response: The beneficial financial impact of the use of radioactive materials to the state economy is discussed in Chapter 5, Section 23, of VOLUME I of the Management Plan, and is a statutorily required factor which the Management Board must consider in determining the need for storage, treatment, or disposal facilities.

15.7B: **The Commonwealth has needed its own facility for the treatment, storage, or disposal of LLRW for many years now. Further foot-dragging only permits the problem to grow to difficult and expensive proportions. (+2)**
Response: Opinion noted. The Management Plan finds that no current need exists for the development of LLRW storage or treatment facilities in the Commonwealth, but concludes that a need exists for disposal facilities.

15.7C: **A need exists to begin immediately to site a facility; if an out-of-state solution becomes available during siting, the state can abandon its siting efforts.**
Response: Opinion noted. The Management Board's current timetable calls for a decision regarding in-state disposal facility siting to be made in February, 1994. If that decision is to proceed with facility siting, Phase II of Chapter 111H

will be initiated. As noted by this commenter, however, any long-range out-of-state solution could cause the Management Board to abandon its siting activities.

15.7D: **The Board's planning and evaluation of the need for disposal facility capacity is based on an extremely non-linear region of the curve on a graph Nuclear Metals, Inc., constructed from the Board's published data on user fees for various annual disposal levels.**
Response: The Board will evaluate the economics of a smaller disposal site in Massachusetts. See response to comment 15.6F.

15.7E: **Future decisions should be predicated on economic analysis.**
Response: An economic analysis of storage, treatment, or disposal facility siting, development, operation, closure, and institutional control is required pursuant to Chapter 111H, and is discussed in the Management Plan. In addition, the Management Board is having an independent economic analysis performed regarding in-state versus out-of-state disposal facility costs.

15.7F: **Because the regulations are only in draft form at this time, it would not be wise for the Board to move forward to try to site a facility by 1996; that's too fast.**
Response: Massachusetts law prohibits a decision regarding facility siting unless the LLRW Management Plan and all pertinent regulations have been adopted by the three agencies responsible for LLRW management: the Management Board, the Department of Public Health (DPH), and the Department of Environmental Protection (DEP). The draft regulations, which were subject to extensive public review and comment between January and July, 1993, are expected to be adopted prior to the Management Board's vote on facility siting, in February, 1994.

15.7G: **It is unclear whether the numbers and graphs provided in the Plan regarding the projections of future MA LLRW generation and the availability of facilities to meet future management needs include projected waste from remediation sites, including sites where there is not a current licensee.**
Response: See response to comment 15.5B.

15.7H: **Concerned that the Board is operating on the presumption that an LLRW facility is the best solution. We should not be encouraging increased utilization of radioactive waste.**
Response: The Board has been instrumental in reducing the radioactive sources that result in LLRW, and minimizing the amount of LLRW generated. The Board recommended a series of source and volume minimization actions to DPH; they were detailed in Chapter 10 of VOLUME II of the draft Management Plan. In addition, as a result of a profound number of public comments on the importance of source and waste minimization, the Board strengthened its recommendations to DPH. The Management Plan will be revised to reflect the Board's additional recommendations.

15.7I: **Concerned that an emergency situation (which would, under Chapter 111H, allow the Board to skip site selection and operator selection phases and public hearings that go with them) can be created by manipulating need data.**
Response: Opinion noted. Only an "emergency or interim" storage facility can bypass the requirements of Chapter 111H regarding facility site selection and operator selection. No such provision is authorized for emergency siting of treatment or disposal facilities.

Chapter 111H permits that "interim or emergency storage plans" may be put into effect "whenever it appears that no facility is or will be available" for the disposal of Massachusetts LLRW. The law also allows such plans to include contractual arrangements with out-of-state facilities, or provisions for the development of an in-state interim or emergency storage facility.

If the Management Board determines that such an in-state interim or emergency storage facility is necessary, the law allows the Board to sidestep facility site identification and operator selection requirements. This provision in the law is intended to enable the Board to develop an interim (i.e., five-year) centralized storage site without following all the site development requirements of Chapter 111H. For the Management Board to pursue such an interim or emergency centralized storage facility, it would first need to include the plans pertaining to the development of such a facility in its Interim and Emergency Storage Plan, as well as in the Management Plan. No such provision is included in the Board's emergency plans at this time.

15.7J: **There is no need to protect jobs. Most of the jobs and revenues derived from radioactive materials uses come from businesses that generate only a small portion of the waste. (+3)**
Response: Whether in business, academia, or medicine (and these are often interrelated), the use of radioactive materials results in approximately 35,000 jobs in the Commonwealth. The Management Board believes that jobs are an important factor to be considered in managing LLRW.

15.7K: **There is no need. Medical research will not cease in MA without an LLRW site. (+1)**
Response: Opinion noted. Medical research will not cease in Massachusetts if such LLRW generators do not have a disposal site. However, much of the research is expected to move elsewhere around the country, to locations where disposal is available. Such medical research institutions as Harvard University will not relocate for lack of a disposal site. However, many of the prominent researchers at that institution will likely move to states where their ability to use radioactive materials will not be hampered by lack of disposal.

15.7L: **There is no need because there is not enough LLRW generated to operate a profitable facility. If a need is assumed, there will be economic pressure to produce more waste.**
Response: The draft Management Plan contains estimates of the life-cycle costs for three sizes of LLRW disposal facilities, if one were to be sited and developed in Massachusetts. Recent data on LLRW generation indicate a larger decrease in volume than the Management Board had previously estimated, and the Management Plan will be revised accordingly. While the economics of LLRW storage, treatment, and disposal facilities are required to be considered by the Management Board, there are other factors to be weighed, as well. They include the protection of public health, safety, and the environment.

15.7M: **Government should not be involved at all; each generator should be responsible for its waste.**
Response: Opinion noted. Massachusetts state government is involved in LLRW management because federal law assigned the states this responsibility, much the same as the responsibility given the states to provide for hazardous waste disposal and the management of other wastes produced in an industrial society.

15.7N: **An aggressive reduction program is needed before proceeding with the siting process; we may find we do not need a disposal facility. (DPH)** (+2)
Response: The Management Board agrees that an aggressive source and waste volume minimization program is an essential ingredient in LLRW management. Some generators have already made great strides in this regard. However, data obtained annually from LLRW generators indicate that volume will not diminish to zero, and there will always be LLRW to manage. While the Management Plan determines that a need will exist for LLRW disposal once the Barnwell, South Carolina, disposal site ceases to be available, that disposal capacity need does not have to be fulfilled through an in-state disposal site if the Commonwealth can arrange for out-of-state disposal.

(2) Storage

15.7O: **The Plan concludes that "centralized storage should be evaluated at a later date for the period beginning in January, 1998." However, this conclusion is based on the assumption that all generators can store on-site for five years, and this assumption may not be true at sites which are being decommissioned or remediated. Therefore, the Board should reconsider its conclusions concerning the need for storage capacity.**
Response: Opinion noted. The Management Board has no information that would lead to a conclusion that sites currently undergoing decommissioning would be prohibited by the regulatory agencies overseeing such decommissioning from storing remediation or decommissioning waste on site. To date, decommissioning waste at some old remediation sites has been stored on the premises, until treatment or disposal has become available.

Some decommissioning and remediation waste is expected to be mixed waste, and will either require storage, or need to be shipped to a treatment or disposal facility. As there are such mixed waste facilities currently under development or now available in the country, the storage on site of decommissioning mixed waste is expected to be less of a problem than perhaps earlier expected. In addition, since the draft Management Plan was written, the largest commercial LLRW treatment business in the nation, Scientific Ecology Group (SEG) of Oak Ridge, Tennessee, has announced that it is considering the development of a five-year storage facility. The Management Board is following the SEG announcement closely, since a nationally available storage facility would ease on-site storage needs for the Commonwealth's LLRW generators.

15.7P: **The Management Plan should include plans for addressing LLRW storage capacity needs, even though no lack of storage will exist for 5-7 years.**
Response: Opinion noted. The Management Board's proposed determination that no need currently exists for an in-state, centralized storage facility led to a decision not to include a summary of the steps necessary to site such a facility in the "Performance Plans" described in VOLUME I. That decision resulted from the Board's conclusion that other factors could arise between now and the five-to-seven-year period, making the explicit features of such a Performance Plan imprudently speculative.

15.7Q: **The Board should consider whether adequate storage capacity exists for LLRW and mixed waste potentially excavated from remediation sites.**
Response: See response to 15.7O.

15.7R: **There is no need. Industry should be solely responsible for LLRW storage.**
Response: Opinion noted. See response to 15.7M and 15.7N.

(3) Disposal

15.7S: **It is time the Board recognized and faced squarely the fact that an in-state disposal facility is needed.** (+2)
Response: Opinion noted. The Management Plan determines that there is a need for disposal capacity for Massachusetts LLRW generators. Whether that need can be fulfilled through arrangements for out-of-state disposal, or will instead require the siting of a disposal facility (or a storage facility if LLRW were to be accepted by another state or regional compact in the future), is a decision that the Management Board will make in February, 1994, after all LLRW-related regulations have been adopted.

15.7T: **There is a need because many sites will have to store LLRW in MA when Barnwell closes, and it won't be just one town dealing with storage. (+1)**
Response: Opinion noted. The Management Plan describes the number of locations throughout the Commonwealth where LLRW is currently stored, or where waste currently sent for disposal would have to be stored on site once disposal ceases to be available. In setting a policy on long-term LLRW management, the Board will evaluate the potential health, safety, and environmental consequences of on-site storage at numerous locations (approximately 100), versus other management options.

15.7U: **An economical solution to LLRW disposal that does not assume long-term on-site storage is essential to the economic viability of businesses and other institutions generating LLRW. Management Plan should reflect need for disposal capacity as soon as Barnwell ceases to accept waste, and not assume that all generators will be able to store on site for five years.**
Response: Opinion noted. As stated in the response to 15.7O, the Management Board has not received information from existing LLRW generators or from officials of agencies overseeing decommissioning sites that on-site storage will be impossible. The Management Board is aware that in some cases, on-site storage will be very costly, and will result in some current licensees reducing or eliminating the radioactive sources that generate LLRW. The Board is also sensitive to the fact that many generators would rather finance a long-term disposal solution, rather than a short-term storage option.

15.7V: **Continued access to an environmentally sound and reasonably priced LLRW facility in the future is critical to Northeastern's biotechnology and material science research. The biotech industry is very important in MA. (+2)**
Response: Opinion noted. The Management Board is aware of the importance of LLRW disposal to the biotechnology industry, and discusses this issue in the Management Plan. This and other factors involving the need for LLRW disposal will be considered by Board members when they make their decision about in-state facility siting.

15.7W: **Unless an economically viable waste disposal solution is found before access to Barnwell is ended, our company will likely be forced to move some of its manufacturing operations out of state. On-site storage for an unspecified number of years is not a viable option for us.**
Response: The Management Board agrees that on-site storage is only a short-term option for addressing the lack of disposal capacity in Massachusetts. This and other options for LLRW management, including siting a disposal facility within the Commonwealth and continuing attempts to negotiate for an out-of-state disposal solution, will be considered by the Board members when they make their decision about in-state facility siting.

15.7X: **I have no fear that medical companies will leave the state if there is no LLRW facility. They are here for the brains around Boston.**
Response: Opinion noted. The Management Plan discusses this concern, and It is one factor among many that the Board members will consider in their decision about in-state facility siting. A realistic concern is that some of those individuals who provide the intellectual capacity at these companies may leave if there is no long-term solution.

15.7Y: **Many biotech companies would leave MA if no disposal is available. While academic institutions like Harvard and MIT won't leave the state, good researches and work done there will leave. (+2)**
Response: See response to 15.7X.

15.7Z: **While a regional facility in another state might be preferable, I see little likelihood of one ever coming into being.**
Response: Opinion noted. The Management Board Is authorized by state law to plan for the potential of in-state disposal facility siting, operation, closure, and institutional control. The Board is also charged to negotiate with other states or regional groupings of states (compacts) for contractual or compact arrangements to accept Massachusetts LLRW. To date, no other state or compact region has indicated a willingness to accept Massachusetts waste. Much of the unwillingness is due to statutory prohibitions against accepting out-of-state or out-of-region waste; other states and regional compacts have established similar policies that have a result similar to a statutory prohibition. The Board continues to talk to all states and regional compacts, however, since current law or current policy could change.

15.7AA: **There is no need. The need for multiple disposal sites is declining nationwide. (+3)**
Response: The decline in the volume of LLRW requiring disposal in licensed facilities is continuing both in Massachusetts and nationally, where 1.74 million cubic feet were shipped for disposal in 1992, in comparison to 2.68 million cubic feet in 1982. The radioactivity of the waste has remained more constant, despite reductions in volume, however. While the decline in LLRW volumes would assume a reduction in the number of disposal facilities planned, the fact that states or regional groupings of states – and not the federal government – are charged with LLRW disposal makes the possibility of just a few national sites less probable, for political reasons. LLRW volume reduction has resulted In down-sizing the size of facilities planned In many states, rather than reducing the number of facilities planned. Discussion and debate of this issue will undoubtedly continue until resolution is achieved.

15.7BB: **There is no need for an in-state disposal facility. Medical waste should not be used as a pretext for proceeding with unnecessary LLRW dumps. Hospitals don't produce much waste. (+2)**
Response: Opinion noted. The Management Board has not used medical waste as a reason for considering the siting of an LLRW disposal facility within the Commonwealth. Radionuclides in medical waste are similar to those in other waste categories, including commercial and academic. All LLRW is the responsibility of state government.

15.7CC: **There is no need for additional disposal capacity until the next century, because the NRC will allow up to 5 years of storage on site. (+2)**
Response: It is correct that the NRC will allow up to five years of on-site storage. Whether the NRC will extend storage beyond that time is uncertain, especially when federal law requires states and compact regions to have disposal facilities in place by 1996. In any event, the siting, licensing, and development of an LLRW disposal facility could last five years, particularly if litigation were involved. The Management Board's decision regarding in-state facility siting, which will be made in February, 1994, will include a consideration of such factors as the time involved in implementing a long-range policy.

15.7DD: **It is likely that South Carolina will give us another extension; there is no need to begin the siting process yet.**
Response: Opinion noted. The Board would be pleased, were a decision to be made by South Carolina and the Southeast Compact Commission to allow out-of-region access beyond the current cut-off date of June 30, 1994. Many of the Board's actions are geared toward eligibility to obtain a contract extension, were one to be available.

15.7EE: **There is no need; a state of emergency has been concocted by the executive director. (+1)**
Response: The Board does not believe a state of emergency has been invented by the Board's executive director. The state's assumption of responsibility is a very real federal law; the loss of access to the Barnwell disposal site in June, 1994, is a contractual actuality. Unless one of these facts is altered, the need for Massachusetts state government to address the LLRW management issue will persist.

15.7FF: **Because of volume reduction efforts and lower anticipated volume due to the reduced demand for military-related nuclear products and the high costs of nuclear power, there is no need for an LLRW facility. (+4)**
Response: Opinion noted. The need for LLRW disposal could be accommodated by the three commercial disposal sites that, before 1993, had accepted the entire nation's LLRW (Barnwell, South Carolina; Beatty, Nevada; and Hanford, Washington). The Hanford site, for example, is estimated to be able to handle the entire country's waste disposal requirements for over 20 years. In addition, the Barnwell and Beatty sites could provide another 20 years of disposal. However, because federal law has enabled the states responsible for these facilities to deny access to other states, like Massachusetts, the Management Board must find LLRW management solutions to handle the LLRW generated in the Commonwealth. Those solutions could include in-state disposal facility siting, or perhaps agreements for out-of-state disposal.

15.7GG: **There is no need because the nuclear industry in Massachusetts will not leave the state if there is no disposal site. (+2)**
Response: Some radioactive materials licensees will not leave the state, but have indicated that they may be forced to alter or eliminate their research that produces LLRW as a by-product. Much of the talent at universities and biotechnology firms may be lured to states where LLRW disposal is available. In addition, some companies may transfer some or all of their business operations to states with disposal capacity. The number of jobs that may be lost, or the revenues that may be transferred to other states, is only speculative at this time.

15.7HH: **There is no need. Industry should be solely responsible for LLRW disposal.**
Response: Opinion noted. See response to comment 15.7M.

15.8 Options to Consider in Meeting Facility Capacity Needs

[NOTE: Comments in this section are grouped under three subtopics -- general comments, non-siting options, and siting options. The second two groups are categorized further, as noted.]

Public Comments:

(1) General comments

15.8A: **A permanent solution to LLRW siting that is both environmentally and economically sound is critical to the members of the [Greater Boston] Chamber of Commerce.**
Response: The Management Board is conscious of the economic and environmental factors that weigh on its decision over how to meet the disposal facility capacity shortfall. These and other considerations are discussed in the Management Plan.

15.8B: **"Progress" is not necessarily good, or unstoppable. (+1)**
Response: Opinion noted.

(2) Non-siting options

[NOTE: This section has been further divided into five categories: (2a) inappropriate site conditions; (2b) don't site; (2c) close power plants; (2d) on-site storage; and (2e) out-of-state solutions.]

(2a) Inappropriate site conditions

15.8C: **Citizens should network to stop siting everywhere.**
Response: Opinion noted. Some citizens have expressed the opinion that no LLRW sites should be developed. Others believe that centralized facilities are far more protective of the public health, safety, and environment than over 100 on-site storage sites scattered throughout the Commonwealth. In any event, LLRW will continue to be produced which will require long-term management strategies.

15.8D: **There is not much communication between eastern and western MA. The farther the site is from the generators, the less the local citizens will know what is going into the site, so the more dangerous it will be.**
Response: If the Management Board determines that a facility should be sited in the Commonwealth, it will follow the same policies and procedures for site identification, licensing, development, operation, and monitoring, no matter where the site is located. In addition, state law empowers the site community to play an integral role in site monitoring and inspections. The site community will have ample opportunity to know precisely what is entering the facility.

15.8E: **If an LLRW facility is not safe, why force it on a rural area? (DEP)**
Response: If the Management Board decides to initiate facility siting, it will make every effort to ensure that the facility is safe, and will oversee the collection of liability funds to cover any potential damage claim. Additionally, the regulations of DPH and DEP, as well as the site community's authority to continuously monitor the facility, would ensure safety.

15.8F: **Small, densely populated eastern states are not the best locations for LLRW disposal.**
Response: The Management Board does not disagree. However, because federal law makes each state responsible for LLRW disposal, if the Board determines that an in-state facility should be sited, the provisions of state law that require monitorability and retrievability of the waste from any disposal facility, and the authority of the site community to select the operator and facility methodology, will provide numerous assurances for a safe, environmentally sound disposal facility.

In addition, from strictly an environmental or public risk perspective, there are numerous other commercial, industrial, and research facilities that might better be located in places other than the densely populated east. Yet they are accepted here and they are important and necessary parts of the infrastructure, industrial base, economic viability, and life support systems of New England.

15.8G: **I don't think there is any place in New England where you can site without contaminating people; the groundwater is so high. (DEP)**
Response: If the Board votes to initiate facility siting, the stringent siting criteria of the DEP will prevent the selection of a site that would allow LLRW to be placed in close proximity to any drinking water supplies.

15.8H: **Don't site in a community that already hosts one or more undesirable facilities. (DEP)**
Response: The Management Board is sensitive to the public's concern that some communities are already providing a societal "burden," such as a prison, within their boundaries. State law, however, requires that if siting is initiated, the most environmentally suitable locations must be found, regardless of political boundaries.

15.8I: **Don't mess up another spot when there is already a site in Barnwell.**
Response: The Management Board agrees that the continued utilization of the Barnwell, South Carolina, LLRW disposal site makes sense, and is hopeful that the South Carolina Legislature will agree to extend access beyond June, 1994. However, unless and until federal law is changed, South Carolina will close its site, and Massachusetts may have to address LLRW disposal within its own borders.

(2b) Don't site

15.8J: **Do not site a facility in Massachusetts. (+31)**
Response: The Management Board will consider siting an LLRW facility only if it determines that siting is the best policy for the management of LLRW in the Commonwealth. The Board has continually discussed with other states and regional compacts the possibility of sending Massachusetts waste out of state. Even though other states and compacts currently refuse to accept Massachusetts waste, the Board believes it is important to carry on discussions and urge a change in policy.

15.8K: **Do not site. There is no such thing as safe disposal of LLRW. (+3)**
Response: The Management Board believes that state law gives it the tools to ensure safe long-term management. The law places important responsibilities in a site community, as well, to serve as an independent control on the Board and other state agencies.

15.8L: **Do not site. Leave LLRW where it was generated. A centralized facility is a bad idea because of transportation risks. (+1)**
Response: Chapter 9 of the Management Plan (VOLUME II) discusses the excellent record of safety for the transportation of LLRW. If a decision is made to site a facility, the environmental impact review process would include an assessment of transportation-related impacts.

15.8M: **Do not site. No more long-lived radioisotopes should be added to the environment, now or in the future.**
Response: Opinion noted. The Management Board's mission is to ensure proper management and disposal for the LLRW by-products from the use of radioactive materials, and to establish public policy that compels the reduction or elimination of radioactive sources and LLRW volumes, where appropriate.

15.8N: **Do not site. The health effects of radiation are cumulative; you should not burden the population further.**
Response: Opinion noted. The health effects of low-dose radiation exposure, which could be the level of radiation at an LLRW facility, are of critical importance to the Management Board. The Board continually collects scientific studies on this issue for review by Board members and the public, and has held a seminar on this subject to help Board members and the public focus on the health effects issue as it relates to LLRW facilities. The Board is aware of the differing scientific opinion on the health effects issue.

15.8O: **Do not site. Stop using radioactive materials.**
Response: Opinion noted. See response to comment 15.8M.

15.8P: **Do not site. Shut down production of LLRW, and dispose of existing LLRW responsibly.** (+2)
Response: Opinion noted. See response to comment 15.8M.

15.8Q: **Do not site. It's silly to think more than a few generators would leave the state. Perhaps, instead, if there is no disposal site, they would drop some services or products that generate LLRW.**
Response: Opinion noted. See response to comment 15.7GG.

15.8R: **Do not site. It is presumptuous of us to pretend to rationally plan for hundreds of years in the future. None of us can envision the timespans over which some of these wastes will stay radioactive.** (+5)
Response: Opinion noted. One role of government is to plan for many years in the future, in this case, hundreds of years. Government plans and initiates numerous activities that have the potential of extending over that time period or longer, such as structural requirements for buildings and bridges, protections for drinking water supplies, etc.

15.8S: **Do not site. People have to come first – there should be no corporate influence. You should not support letting people die so that others can get rich.** (+1)
Response: Opinion noted. The Management Board does not agree that its mission of ensuring the safe management of LLRW is cast in this commenter's terms.

15.8T: **You don't understand that you have lost something you can't control. Pandora's Box has to be closed.**
Response: Opinion noted. See response to comment 15.8S.

15.8U: **A totally different approach should be used for the "big four" generators – such as on-site storage for 50 years at the nuclear power plants. Then the state should determine a different policy for small generators – one that does not require siting.**
Response: Opinion noted. Such an option would require the cooperation of the utility companies which own nuclear power plants – they have publicly expressed unwillingness to store other generators' LLRW. Or, it would require the Commonwealth to take a power plant site by eminent domain, in order to assume control over on-site storage. Such a costly plan would still require that the site identification, characterization, licensing and other provisions of Chapter 111H be followed. In addition, it would require a change in policy of the NRC, which presently does not allow on-site storage for more than five years.

It is questionable whether such "pre-selected" sites at the nuclear power plants would fulfill the requirements for "superior sites" established in the law. In addition, the comment suggests a "different policy" for small generators, one that would not require siting. The state has the responsibility to manage all radioactive waste in the Commonwealth.

15.8V: **State should not site a facility that mostly benefits nuclear power and nuclear arms generators, since most of the waste from medical, biological and small business generators can be managed by short-term storage for decay.** (+1)
Response: The Management Board is responsible to manage all LLRW, regardless of its generating category, and notwithstanding the length of its decay rate. See response to comment 15.8M.

(2c) Close power plants

15.8W: **We need to rid ourselves of nuclear energy, and subsequently nuclear waste.** (+3)
Response: Opinion noted. There has not been a new nuclear power plant ordered since 1973. If the trend away from nuclear power continues, the nation's dependence on nuclear energy will disappear. However, each power plant that is shut down will require decommissioning, and will generate additional LLRW in the process. And unless the federal law is changed, which assigns LLRW management to each state, Massachusetts will continue to be responsible for overseeing safe LLRW disposal.

15.8X: **If all nuclear power plants announced they were shutting down, then we'd help solve the waste problem. Otherwise, a new disposal/storage site would give a blank check to a new generation of nuclear power plants, all of which would generate still more waste.**

Response: Opinion noted. As stated in the response to 15.8W, closing nuclear power plants will not eliminate the LLRW problem. It would, indeed, reduce the amount of LLRW that would be produced over time, were those plants to continue to operate. In addition, other industries and institutions use radioactive materials that result in LLRW that requires long-term management programs.

(2d) On-site storage

15.8Y: **The best option is indefinite on-site storage strictly regulated and monitored by government, with all costs paid by the generators, forever. (+1)**

Response: Opinion noted. One of the options under consideration by the Management Board is on-site storage. However, that option is only a short-term solution, as current federal policy prohibits storage as an alternative to disposal. The Management Board also has questions regarding the environmental suitability, and public health and safety, of allowing perhaps 100 or more such storage sites to exist in the Commonwealth, long-term.

15.8Z: **LLRW from reactors should be kept on site. Ninety-five percent of the radioactivity would be dissipated to safe levels after 50 years.**

Response: Opinion noted. Until recently, when the NRC issued a new policy against on-site LLRW storage for longer than five years, a nuclear power plant could store its waste for the operating life of the facility – perhaps 40 years, pursuant to 10 CFR 50.51 of the NRC regulations. Typically, 95 percent of the activity has decayed in 50 years. However, this short-lived activity is of little consequence in a disposal site. Whether it decays at the reactor or other generation facility, or at the disposal site is not critical, although the disposal site must provide a safer and more secure environment for this process to occur.

15.8AA: **Federal law allows Pilgrim and Yankee-Rowe to store waste from other power plants in New England.**

Response: NRC guidelines allow a nuclear power plant to store waste for other LLRW generators, whether the waste originated at other power plants or on the premises of commercial, medical, or health-related licensees. In that case, the power plant would have to apply and receive from the NRC a 10 CFR Part 30 license, in addition to the 10 CFR Part 50 license to operate a nuclear power plant. In other words, the storage by Pilgrim or Yankee Rowe of other licensees' LLRW would require an additional license, which neither plant currently holds.

15.8BB: **Medical waste should remain on site to decay until it can be handled as hazardous waste.**

Response: Some medical LLRW contains toxic, chemical "hazardous" waste, or exhibits the characteristics of hazardous waste. This waste is called "mixed" waste. If such waste also is contaminated with short-lived radioisotopes, it can be stored until the radioactivity decays, and then can be treated as hazardous waste. In those instances where short-lived mixed waste is generated, it is stored for decay, as the commenter suggests. Other medical LLRW is not "mixed" waste, and many contain either short- or long-lived radionuclides. The short-lived waste can be stored for decay; the long-lived waste will require disposal in a licensed disposal facility, or an alternative management option.

Depending upon the length of the half-life, it is not clear that decay at the site of generation is the safest or most desirable alternative.

(2e) Out-of-state solutions

15.8CC: **An in-state facility should be a last resort; do all you can to get another state to take our waste. (+5)**

Response: The Management Board agrees. It and other representatives of the Commonwealth have discussed such a possibility with numerous states over the past four years. Unfortunately, all states and all but one regional compact of states (the Northeast Compact) have explicit statutory prohibitions or stated policies against taking waste from outside their states or regions. With this kind of prohibition policy in place, attempts by Massachusetts to negotiate an agreement to date have been unsuccessful.

15.8DD: **Based upon supply economics, it is very likely that other states will want our waste.**

Response: If the disposal of LLRW were only a market issue, several states would probably have offered to take Massachusetts LLRW for the revenues they would receive. The State of Connecticut recently offered $100 million to Texas, if that state would accept Connecticut's waste in the new Texas disposal site. Texas refused.

15.8EE: **Board should continue to seek agreements such as that with the Central Midwest Compact Commission concerning access to treatment facilities, including those for solving the mixed waste problem. (+1)**

Response: The Management Board has done just that. By signing the Interstate Access Agreement for storage and treatment, Massachusetts has enabled LLRW generators in the Commonwealth to utilize treatment facilities located in other states.

15.8FF: **Retain out-of-state access as long as possible.**

Response: The Management Board, on behalf of the Commonwealth, has been successful in retaining access to the disposal site in South Carolina, when other states and regions have lost such access. The Board will continue to take action aimed at extending the present access arrangement, rather than cutting it short or ending it in June, 1994.

15.8GG: **Put an LLRW disposal facility in John Sununu's state (New Hampshire).**
Response: Opinion noted. LLRW generators in New Hampshire produce very little LLRW annually, and therefore the New Hampshire government has adopted a policy of assuming that a larger LLRW-generating state will eventually agree to accept New Hampshire waste. New Hampshire officials routinely contact the Management Board to discuss this possibility, and to monitor Massachusetts LLRW management activities.

15.8HH: **Some MA waste could go to Texas.**
Response: For over two years, the Management Board repeatedly made that very suggestion to Texas officials. Unfortunately, Texas decided to accept out-of-state waste only from the small-generating states of Maine and Vermont. Texas law limits the amount of out-of-Texas waste that may enter its disposal facility to 20 percent of the total Texas volume. This amount exactly equals the waste volume currently generated by Maine and Vermont.

If Texas were to raise its 20-percent ceiling, or if other out-of-state facilities became available to Massachusetts LLRW generators, there is no prohibition against LLRW going to more than one facility. While such an arrangement may be quite complex to orchestrate, the Management Board would pursue such an option, were it available.

15.8II: **Only the federal government can handle materials that will be hazardous longer in the future than the dinosaurs lived in the past; it belongs at Hanford.**
Response: Responsibility for LLRW management has been assigned by Congress to each of the 50 states.

15.8JJ: **If our LLRW is shipped out of state, it should be disposed of as safely as if it were disposed of here.**
Response: Some citizens have questioned whether Massachusetts should allow its LLRW to be disposed of in a "shallow land burial" (SLB) facility, since that type of disposal methodology is outlawed in the Commonwealth. However, due to hydrogeological, climatic, and other differences between Massachusetts and the states that will use SLB at arid, desert sites (Texas and California), it would be necessary to evaluate SLB under different conditions than exist in Massachusetts.

15.8KK: **Site should be in a less-populated state.**
Response: Unless and until federal law is changed, Massachusetts and all other states will be responsible for LLRW disposal, regardless of their population density. Over the years, Massachusetts officials have negotiated with less populated states, including New Hampshire, Maine, and Vermont. These states have always been unwilling to take LLRW from larger volume-producing states, which also are more populated. Also, see response to comment 15.8F.

15.8LL: **It would be morally irresponsible to use disadvantaged countries as a dumping ground for our high-tech waste. We would have no assurance that it would be adequately isolated. The Management Plan should not even suggest that Massachusetts generators negotiate for foreign disposal of this waste.**
Response: Opinion noted. Current federal policy discourages this option. However, federal officials have indicated that a proposal originating from another country, rather than from Massachusetts, would not necessarily be obstructed by the federal administration.

(3) Siting Options

[NOTE: This section has been further divided into six categories – (3a) siting criteria; (3b) siting process; (3c) MA-only site; (3d) regional compact; (3e) storage; and (3f) facility operation.]

(3a) Siting criteria

15.8MM: **There should be a 1.5-mile setback from a facility to the nearest residence or business. This is mentioned in the DEP introductory discussion, but was apparently dropped from the DEP draft siting regulations. (DEP)**
Response: The Department of Environmental Protection (DEP) discussion document that proceeds the DEP draft siting criteria regulations includes a general reference to setbacks between the site and "larger residential areas and sensitive populations." The DEP draft regulations include a "conditional" criterion in 41.24(2)(b) regarding any site where the waste management area is within 1.5 miles of the property limits of a residentially zoned area that excludes industrial and commercial development. This criterion is intended to "condition the consideration of sites" that would be closer than 1.5 miles to completely residential zones. Neither the DEP discussion document nor the regulations propose such a setback from business properties.

The Management Board concurs with DEP's proposed "conditional" criterion.

15.8NN: **Locating a facility in a poor community may be expedient, but does not serve the economic interest of the state or the business community. (DEP)**
Response: Neither the Management Board, nor DEP, have proposed any siting conditions that would preferentially place a facility in a "poor" community.

15.8OO: **MA has a high population density – not a good place for a site. (+1) (DEP)**
Response: The draft DEP siting criteria exclude sites "where the existing population density, projected population growth, or future development are reasonably likely to interfere with the ability of the facility to meet DPH performance objectives." The Management Board believes that if siting is initiated in Massachusetts, there are areas of the state that would not fall within that exclusionary criterion.

15.8PP: **It's not fair to put LLRW into a neighborhood. (DEP)**
Response: See response to comment 15.8MM.

15.8QQ: **The Yankee Rowe site does not meet DEP's draft siting criteria for a long-term disposal facility.**
Response: Opinion noted. The Management Board cannot ascertain whether the Yankee Rowe site is suitable for consideration without completing the site identification procedures in Chapter 111H. No such work has been conducted, since the Board has not voted on the question of initiating facility siting.

(3b) Siting process

15.8RR: **Current state legislation should be reviewed and revised as necessary to show potential compact states that MA is a realistic partner in any compact.**
Response: The Management Board does not currently consider any provision of state law to be a major impediment to its conclusion of a compact or contract to send Massachusetts LLRW to a facility out of state. If the Board were to decide to site a facility in the Commonwealth, and to seek compacting partners for the use of such a facility, it would, of course, need to conduct the type of review suggested.

15.8SS: **Although Chapter 111H excludes "shallow land burial," it contains all the necessary provisions to provide for the shallow land burial of approx. 300,000 cu. ft. per yr. Now, in the mid-1990's, the conventional wisdom is that an above-ground, engineered facility is best suited to the climatic and geologic conditions in the Northeast. If one builds an above-ground, engineered facility, many environmental safety provisions for shallow land burial, such as identifying the ideal state site, are no longer applicable. Chap. 111H should be streamlined and criteria such as "technically excellent" should be substituted for "superior."**
Response: Chapter 111H takes a "belt and suspenders" approach to the issue of site suitability, in that it requires that DEP's site suitability regulations follow the basic structure of the NRC's regulatory criteria, which were developed for shallow land burial technology, even though shallow land burial is prohibited in Massachusetts. The rationale for this approach is that, since the actual technology to be utilized in Massachusetts will not be known until after the site is selected, the site should be chosen so as to be good enough for even the most primitive technology available – namely shallow land burial.

This approach ensures that a margin of safety is built into a facility. The technology chosen cannot rely on the site's natural characteristics as the primary barrier for isolation of the waste, since any technology that does is shallow land burial, and is thus prohibited. Nevertheless, Chapter 111H assumes that it is best to have a site with natural characteristics that could provide some kind of barrier that would contribute to waste isolation.

The definition of "superior site" in Chapter 111H is "the site selected by the Board." DEP's draft site selection regulations set forth the criteria that the Board must use in making that selection. While it is clear that a site satisfying these criteria would be "technically excellent," any such short-hand term should be understood to mean that the site satisfies DEP's requirements.

15.8TT: **Take as much time to site as the citizens of MA need. (+1)**
Response: Chapter 111H, the Low-Level Radioactive Waste Management Act, suggests time periods for Management Board and other agency action in connection with facility siting. If the Board needs more time to complete a stage or activity in the siting provisions of the law, it can institute such an extension. For example, the Board extended the public comment period for the draft Management Plan and regulations, in response to requests from the public to do so.

15.8UU: **There is no good site for this waste.**
Response: Opinion noted. If the Board initiates siting, the DEP siting criteria regulations and the oversight of candidate site Community Supervisory Committees will ensure that a "good site" is identified, if one exists. Federal regulations must be followed first, but the state has added additional safeguards, such as the requirements for monitoring and retrieving all LLRW, if necessary, which force certain engineering design considerations that are not required of the shallow land burial disposal method.

15.8VV: **Do not even consider the Northeast for a site.**
Response: Opinion noted. If the Management Board decides to initiate facility siting, it will have to consider locations within Massachusetts. Also, see response to comment 15.8F.

15.8WW: **A facility should be located in the most cost-effective place, near a concentration of biotechnology industries that use radioactive materials. (DEP)**
Response: Opinion noted. The DEP siting criteria are based on (a) 13 minimum criteria specified in Chapter 111H; (b) compatibility with the federal NRC regulatory program for LLRW management, and (c) protection of the public

health, safety, and the environment. Demographics of a potential site area are one consideration, although DEP's specific demographic criteria neither stipulate nor rule out nearness to industries that use radioactive materials.

15.8XX: **Put the waste in the towns were it is being produced. (+6) (DEP)**
Response: Opinion noted. See response to comment 15.8Y.

15.8YY: **Facility should be located in central MA so as to minimize transportation distances and costs. (DEP)**
Response: Opinion noted. If the Management Board initiates facility siting, transportation issues will be important to the selection of a superior site. Draft DEP siting criteria do not require sites in any specific area of the state, however. Instead, the criteria require "conditional consideration" of sites that would meet or be capable of being constructed or upgraded to meet applicable state and federal transportation laws and regulations; and give "preference" to sites that are closer to interstate highways or other multi-lane limited access roads, sites served by routes that are not currently congested, sites that are accessible by several modes of transportation, and sites that have primary access routes with a "lower average number of residential dwellings per road mile" than sites that do not meet these criteria.

15.8ZZ: **Review all the draft documents with the likelihood of a rural site in mind, to ensure consistency and to maximize the safety of any facility built in rural MA, in case that is where it ends up. (+2)**
Response: The Management Board has reviewed all of its policies and draft documents to ensure that public health, safety, and environmental protection are the key elements of each, no matter whether or not the Board proceeds with in-state facility siting, and regardless of where a superior site might be located.

15.8AAA: **If LLRW facility is safe, why not put it in a city? (DEP)**
Response: In order to be licensable, a site must meet certain performance objectives required by federal and state regulation. While it would be possible for these objectives to be met in an urban area, it would be more likely that sites meeting the objectives could be identified in less populated areas. DEP siting criteria "prefer" sites located in areas of lower population density, over sites located in areas of higher population density. This criteria is not "exclusionary," but merely preferential, according to the judgment of the Management Board.

15.8BBB: **If a disposal facility would be safe, let's put LLRW in a vault in the State House. (+2)**
Response: Opinion noted.

15.8CCC: **Instead of spending lots of money and contaminating a clean site, we could put the waste into interim storage at Yankee Rowe and Pilgrim Station.**
Response: Opinion noted. See response to comment 15.8AA.

15.8DDD: **The southeastern portion of MA has too many wetlands; too high a population density; too much land for such important industries as Ocean Spray; too critical a drinking water supply. It has taken enough unwanted facilities, and therefore should not be considered for an LLRW facility. (DEP)**
Response: Opinion noted. If the Management Board initiates LLRW facility siting, the process of screening the entire state based on the DEP siting criteria, and eliminating all unsuitable areas, would begin. Only then would the Board ascertain what locations in the state were appropriate for consideration.

15.8EEE: **Please don't consider Yankee-Rowe as a disposal site. (+3)**
Response: Opinion noted. See response to comment 15.8DDD.

15.8FFF: **Concerned that a site would be located at Pilgrim because of the land Boston Edison purchased and because a Boston Edison employee is on the Public Participation Advisory Committee (PPAC).**
Response: Opinion noted. There is no connection between the composition of the PPAC and any potential siting decisions.

15.8GGG: **Boston Edison has no intention of proposing Plymouth as a potential LLRW repository site.**
Response: Opinion noted.

15.8HHH: **Attleboro should not be considered because of its dense population, non-central location, and incompatibility with the DEP draft siting criteria. (DEP)**
Response: Opinion noted. See response to comment 15.8DDD.

15.8III: **There is no chance an LLRW facility would ever be accepted in the Taunton area, and I am opposed to such a facility. (+5)**
Response;
Opinion noted. See response to comment 15.8DDD.

15.8JJJ: **Walpole should be excluded from consideration because it hosts the state's only maximum-security prison.**
Response: Opinion noted. See response to comment 15.8H.

15.8KKK: **If you think the Walpole sludge site was a problem, wait until you name a site for an LLRW facility. The state will really have a fight on its hands.**
Response: Opinion noted. See response to comment 15.8DDD.

15.8LLL: **Western MA should not have to take a facility when most LLRW is generated in eastern MA. A disposal facility would not be conducive to the image of a world-class tourist area. Just because some parts of Berkshire County are depressed does not mean we are ignorant of the danger to our environment. Trucks coming through Berkshire County would create a dangerous situation for the communities there. In addition, the geography in Berkshire County is not conducive to a facility. (+32) (DEP)**
Response: Opinion noted. See responses to comments 15.8L and 15.8DDD.

15.8MMM: **I am opposed to any plans to dump dangerous nuclear waste in my area [Northampton] and will fight such a vicious plan with all my powers.**
Response: Opinion noted. See response to comment 15.8DDD.

15.8NNN: **To bring more waste into the Pittsfield area, "the PCB capital of the world," would be doubling the health hazards here. (DEP)**
Response: Opinion noted. See response to 15.8DDD.

15.8OOO: **If you are considering Fort Devens, be advised that the residents of the surrounding towns have quietly endured the hardship of having military jets fly over our homes, artillery shells exploding day and night, tanks and trucks driving over our roads for years and years, and hazardous waste spills and dumps that have to be cleaned up. (DEP)**
Response: Opinion noted. See response to comment 15.8DDD.

15.8PPP: **It would truly be ironic if, after millions of dollars are spent to clean up toxic waste sites at Fort Devens, the state decided to build a facility there which would pose significant risks to public health and the environment. (DEP)**
Response: Opinion noted. If the Management Board decides to site an in-state facility, it will be one that the Management Board can ensure will not pose significant risks to public health, safety, and the environment.

15.8QQQ: **Worcester is not generally suited for a disposal facility.**
Response: Opinion noted. See response to comment 15.8DDD.

15.8RRR: **We have fought other battles, such as the proposed airport. Please don't site here in the Fitchburg area.**
Response: Opinion noted. See response to comment 15.8DDD.

15.8SSS: **I don't want the site in Westminster. We have high groundwater. (DEP)**
Response: Opinion noted. See response to comment 15.8DDD.

15.8TTT: **The idea of a facility in my area is too scary.**
Response: Opinion noted.

15.8UUU: **Ship DuPont's waste to their home office in Delaware.**
Response: Opinion noted. Delaware is part of the Appalachian Compact, which prohibits waste importation from outside its region, except for storage or treatment.

15.8VVV: **Current wisdom is that unless a voluntary site can be identified, the process is doomed to failure. It should be the responsibility of the state and potential repository developers to identify such potential volunteer sites and introduce them into the process. If volunteer sites can be identified, there should be a provision to allow these sites to be characterized. Under the present system, even if communities came forward with sites, they will not be included in the process until sites turn out to be "superior." With above-ground facilities, many sites could meet environmentally stringent "technically excellent" criterion.**
Response: It is the intention of the Management Board, if it initiates facility siting, to preliminarily characterize any volunteer sites prior to issuing the Candidate Sites Identification Report.

15.8WWW: **If no MA town accepts the site, store all medical waste for decay and shut down Pilgrim Station.**
Response: Opinion noted. This proposal fails to address the questions of providing LLRW disposal for all Pilgrim existing and decommissioning waste, LLRW from medical licensees that cannot be stored for decay, and LLRW from academic, commercial, and government licensees.

15.8XXX: **Consider lifestyles in an area (western MA) as well as economics.**
Response: Opinion noted. See response to 15.8DDD.

(3c) MA-only site

15.8YYY: **If we site without ensuring that the facility is only for MA generators, it will be a very short-lived site.**
Response: Opinion noted. If the Management Board initiates disposal facility siting, the Disposal Facility Siting Performance Plan described in VOLUME I of the Management Plan provides that the Board would have to make decisions regarding availability of a Massachusetts facility to other states. Those decisions would include: (a) determining whether a MA-only facility, a small regional facility, or a large regional facility was to be identified; (b) if choosing to regionalize, proceeding through a regional compact or by contract; and (c) choosing the states to join a regional compact or contract.

15.8ZZZ: **"Going it alone" is a bad strategic decision for MA. Not enough waste is generated in Massachusetts to go it alone. (+2)**

Response: Opinion noted. The Management Board annually collects and evaluates data from all LLRW generators in order to assess the size needs of a "Massachusetts-only" disposal facility, a small regional facility, and a large regional site. Data from the 1992 survey indicate that annual volumes may drop from 30,000-35,000 cubic feet per year (the Board's current estimate of future waste generation), down to approximately 20,000 cubic feet per year. The Board uses a nationally accepted economic model to identify life-cycle facility costs. New costs and user fees for a 35,000 cubic feet per year "Massachusetts-only" facility (with the additional volume due to decommissioning activities anticipated over time) will be analyzed through the economic model, and the Management Plan will be appropriately revised.

15.8AAAA: **Assuming the analysis of an annual waste volume of 8,236 cubic feet, a MA-only site must be ruled out as financially inviable, using the Board's own data and modeling methods. This option (MA-only) should be eliminated for further consideration. Whether one believes a disposal facility is desirable or not for MA, everyone should be able to agree that the worst conceivable outcome would be to end up with a non-viable site, where unrealistic user costs result in insufficient revenues and jeopardize essential health, safety and environmental programs.**

Response: Although the Board does not believe that the data support a projected annual waste volume as low as 8,236 cubic feet, the Board will add an economic analysis of a Massachusetts-only disposal site based on smaller LLRW quantities than previously projected. See response to comment 15.6F.

(3d) Regional compact

15.8BBBB: **Board should get a legal opinion on the constitutionality of a compact's right to exclude our waste.**

Response: The constitutionality of a compact's right to exclude out-of-region waste was recognized in the U.S. Supreme Court's decision on New York v. United States, 112 S.Ct. 2408 (1992).

15.8CCCC: **Seek original solution with other unaffiliated states. (+1)**

Response: Opinion noted. The Management Board has held continuous discussions with other "unaffiliated" states about LLRW disposal issues of mutual concern. To that end, the Board organized a group of state officials, known as the "Working Group," that meets periodically.

15.8DDDD: **Compact arrangements should be made only with a state that builds its own facility, along with Massachusetts, to avoid need for waste importation.**

Response: This possibility will be discussed by the Board, if it initiates facility siting.

15.8EEEE: **Why not form a compact with one small New England state, just so we can exclude waste from other states.**

Response: See response to comment 15.8DDDD.

15.8FFFF: **Do not compact with Connecticut or New Jersey.**

Response: Opinion noted. See response to comment 15.8YYY.

15.8GGGG: **MA cannot afford to go it alone. If we site and build a disposal facility, it will be built for other states as well. (+5)**

Response: Opinion noted. See response to comment 15.8ZZZ.

(3e) Storage

15.8HHHH: **Plan for a storage facility just for LLRW from the majority of small generators – a small fraction of the total curies to be monitored, shorter-lived radionuclides, etc. (+1)**

Response: This option fails to meet the other responsibilities of the state to provide management and disposal for all LLRW, regardless of the category of generator, the length of the half-life of the radioisotopes in the waste, etc.

(3f) Facility operation

15.8IIII: **Storage for as long as 500 years is both perilous and undesirable.**

Response: Opinion noted. If the Management Board initiates disposal facility siting, it will identify a superior site for a "disposal" facility that would, in reality, provide long-term storage. This is due to the fact that Massachusetts law requires any disposal facility to be capable of monitoring and retrieving the waste, and prohibits the state from abandoning the site if any radioactivity remains that is greater than levels allowed to be released to air or water under federal or state regulations.

15.8JJJJ: **We can't build or maintain control over a repository that will last thousands of years.**

Response: Opinion noted. See response to comment 15.8IIII.

15.8KKKK: **Judging by privatization efforts in state prison and forestry systems, the quality of service goes down when a private company takes over what should be government's responsibility. Taxpayers don't get what they paid for, and there is no recourse.**

Response: State law requires any facility to be sited on land owned by the Commonwealth, and empowers the site community to select the facility technology and operator. Facility monitoring throughout its operational, closure, post-closure observation and maintenance, and institutional control periods must be conducted by the operator, the DPH, and the site community. The site community's responsibility is to serve as an independent "check" on state agencies, and will ensure that the facility is operated in an manner protective of the public health, safety, and the environment.

15.8LLLL: **We couldn't keep out waste from other states if the facility were run by a private contractor. A private contractor's interest is to fill up the facility as fast as possible. Think about the Commonwealth running the facility instead. (+3)**
Response: The Comprehensive Operating Contract would specify exactly how a facility would be operated. The Board would also have the right to approve all waste acceptance criteria employed by the operator prior to any facility's opening (and at least annually thereafter). If the Board were to deem it appropriate, it would be a simple matter to limit the operator to a maximum annual volume of waste, so that the facility would not "fill up" too fast. Such an approach, however, may not necessarily be in the best interests of the Commonwealth. The Board will have numerous opportunities to make and review this judgment, if it decides to proceed with site selection.

Chapter 111H reflects the policy that the operation of an LLRW facility is best undertaken by the private sector. The Board concurs with this judgment.

15.8MMMM: **A private corporation tries to cut costs, and that means cutting corners. With something this dangerous, that's a concern. (+3)**
Response: Opinion noted. See response to comment 15.8KKKK.

15.8NNNN: **Human error and human profit-holders are always going to be the problems.**
Response: Opinion noted. See response to comment 15.8KKKK.

15.8OOOO: **The federal government can't control private waste contractors; how can we expect to in MA? (+1)**
Response: Opinion noted. See response to comment 15.8KKKK.

Chapter 16: The Economic Impacts to a Site Community of Facility Siting

Background:

Because there are risks involved in the use of radioactive materials that can result in the generation of LLRW, but also negative consequences involved in failing to manage LLRW properly, the Commonwealth's LLRW Management Act, Chapter 111H includes provisions for compensation and impact payments to a site community were an LLRW storage, treatment, or disposal facility to be located in Massachusetts.

"Compensation" offsets burdens borne by a site community, and "impact payments" provide monies, services or other tangibles over and above the municipality's expenses in having a facility within its borders. Types of impact disbursements can be monetary or other intangibles.

Compensation can include grants to assess the impact of a proposed facility; payments for losses of property taxes; monetary payments to compensate for health and environmental risks; community-wide health monitoring programs; property value guarantees; payments or equipment for emergency services, road improvements, insurance, etc. Impact payments can include purchase of park land; representation on the facility governing board; payments for municipal services such as schools, libraries, swimming pools, etc.; agreements by the facility operator to hire "locally" and purchase supplies and materials locally; lump-sum payments; tipping fees; and assistance in enhancing the economic development potential of the community.

16.5 Recommendations on Community Compensation and Impact Payments

[NOTE: The comments in this section are grouped under three subtopics – state assistance; community impacts; and abutting communities.]

Public Comments:

(1) State assistance

16.5A: **The state should be very generous.**
Response: The Management Board believes that the siting of an LLRW storage, treatment or disposaL facility should include impact payments to offset potential environmental, health, and economic risks.

16.5B: **If the state sites a facility in a town that uses well water only, the state should build a back-up water system in case the wells are polluted by the facility.**
Response: If the siting process begins, groundwater protection will be a major consideration. In addition, through its authority to select the facility operator and to consult with the Management Board and the operator during negotiations for

a Comprehensive Operating Contract, a site community has a significant role in negotiating for various types of compensation and impact payments, including measures relating to its water system.

16.5C: Offer specific, very attractive monetary package to towns, then have the generators pay back the money. The high price tag would also function as an extra incentive for waste minimization.
Response: A bill under consideration by the Massachusetts Legislature at this writing would enable the Commonwealth to provide significant compensation and impact payments to potential site communities, and to a "superior" site community. The bill proposes that funds expended by the Commonwealth for LLRW facility siting, including compensation to a site community, would be reimbursed by LLRW generators. Such a system could enhance waste minimization activities.

16.5D: The state should take responsibility for any increased health problems in the site community.
Response: Opinion noted. See response to 16.5B.

16.5E: We need a strong program for training emergency response personnel.
Response: Opinion noted. See response to 16.5B.

(2) Community impacts

16.5F: Basically, to get a community to accept a facility, you buy the community.
Response: Opinion noted.

16.5G: The jobs created by an LLRW facility could be beneficial.
Response: Opinion noted.

16.5H: If site is in Berkshire County, we would not be the ones to benefit from it.
Response: Opinion noted.

16.5I: Study grants may be requested frivolously.
Response: Opinion noted.

16.5J: When a site is chosen, the environmental effects should be cost-accounted, and a strict financial projection and accounting required of all costs, including the economic impact -- projected into the future.
Response: Such an exercise would be conducted as part of the determination of the level of payments necessary from the facility users to finance the required institutional control activities and insurance protections.

16.5K: Don't forget the full costs of using radioactive materials. We sometimes don't see all the costs over time.
Response: Opinion noted. See response to 16.5B.

(3) Abutting communities

16.5L: Towns that abut a candidate site are entitled to money to evaluate environmental studies, etc.
Response: The definition of "neighboring community" comes directly from Chapter 111H: "Neighboring community, a community, other than a site community, which, according to the most recent decennial census ..., has at least 20 percent of its population residing within three miles of any superior site."

The framers of Chapter 111H discussed the relationship between the location of a facility site and surrounding communities. Testimony was received from citizens impacted by various siting proposals that the effects on neighboring communities could vary significantly, with population density identified as one key determining factor. This concern was the basis for the current "neighboring community" definition.

The Management Board has evaluated the "neighboring community" definition along with the definition of "affected community" (i.e., "a community, other than a site community, which is identified in an environmental impact report... and can be expected to experience significant impacts as a result of the location, development, operation, closure, post-closure observation and maintenance and institutional control of a facility") and the definition of "site community." The Board believes these three groups of communities, taken together, ensure that the communities truly impacted by a facility site have the greatest say in the process. In addition, if the Board initiates siting and a superior site is named, the Board will encourage participation at Community Supervisory Committee meetings and other meetings by the residents of all surrounding communities.

16.5M: The modified single-community payoff described in Sections 33 and 34 of Chapter 111H must be extended. No single community should be allowed to volunteer its neighbors for impacts for which they receive disproportionate compensation.
Response: See response to comment 16.5L. An "affected community" would have some ability to negotiate for benefits with the Management Board and the site community.

16.5N: Redefine "community" to include everything within 10 miles of the facility, or more for transportation routes, shared water sources, etc. (+1)

Response: See response to comment 2.4J.

16.5O: **"Neighboring community" definition (20 percent, 3 mi.) is for urban and suburban communities, yet the other siting criteria strongly favor rural areas. The definition is not appropriate to rural towns. (+3)**
Response: See response to comment 2.4J.

Chapter 17: Ensuring Property Values in the Vicinity of LLRW Storage, Treatment and Disposal Facilities

Background:

Low-level radioactive waste (LLRW) storage, treatment, and disposal facilities have been sought out by some communities around the nation and elsewhere for the jobs and other economic benefits they offer, but have been contested in other localities due to public concerns about the facilities' ability to protect public health, safety, and the environment.

Even though Massachusetts law prohibits LLRW disposal by the method known as "shallow land burial," many citizens still consider such facilities as unwanted land uses. As part of such a characterization, some citizens perceive that an LLRW facility would adversely affect their property values.

The concept of property value protection, or land value guarantees, is emerging as a new form of economic compensation in communities or regions where unwanted land uses are sited. Guarantees of compensation for lost value are being offered directly to abutting landowners in order to provide them assurances against perceived or real property value reductions if their property is near an unwanted facility.

The Management Board recommends a two-tiered property value protection program funded by the facility operator and delineated in the "comprehensive operating contract" – a legally binding document signed by the facility operator and the state. The Board's property value guarantee program consists of:

> (1) a pledge of property value protection triggered by the Board's approval of its Candidate Sites Identification Report, which would be available to properties within a half-mile of any waste management area identified within each candidate site chosen to undergo detailed site characterization. Property owners outside the half-mile radius but within one mile of any waste management area could also seek inclusion in the protection district, through Management Board approval (after consultation with the Community Supervisory Committee); and
>
> (2) a guarantee of property value protection for properties in the vicinity of whichever candidate site is chosen as the "superior site" once the facility receives a license, and a property owner wishes to sell his property.

17.4 Recommendations to Ensure Property Value Protection

Public Comments:

17.4A: **The very process of site selection devalues property.**
Response: Opinion noted. Many of the studies referenced in VOL. II, Chapter 17 of the Management Plan indicate that property values do not necessarily diminish around such land uses as solid waste landfills and LLRW disposal sites. However, there is generally a perception that land values are lost. Because the Board is concerned about this perception, although it does not agree with it, the Board believes property value protection will serve as an important provision to reassure landowners and to stabilize property values during detailed site characterization.

17.4B: **The property value protection district boundary is written solely with the vested economic interests of industry and the state in mind, with no consideration of what the real effects of a facility are to the public. (+3)**
Response: The Management Board struggled with the notion of what would be an appropriate protection district. It believes a protection district encircling a waste management area (i.e., the portion of a facility where LLRW is treated, stored, or disposed of) for one-half mile, and potentially encompassing properties up to one mile from such area – is a suitable distance for an operator-funded protection program. The Board believes that neither properties inside or outside such an area will be adversely affected as a result of an LLRW facility, because of the detailed siting process that is based upon environmentally protective siting criteria of the Department of Environmental Protection, and, additionally, due to the involvement of municipal officials and citizens in any siting process. However, because the public perception is so great that land values would diminish, the Board concludes that such a protection mechanism will help to offset residents' fears and will help stabilize property values during detailed site characterization. The Board is also aware that additional agreements on property value protection may be negotiated as part of operator selection, thereby allowing some flexibility on the size and shape of the protection district.

17.4C: **It's wrong that a homeowner in a candidate site town could never recoup his/her loss if another town is chosen for the superior site. (+1)**

Response: Opinion noted. On the other hand, if a community's property values decreased because the town contained a candidate site, these values should go back up following the news that the site has not been selected. The "pledge" of property value protection, which would become a "guarantee" only for the properties in the Property Value Protection District of the Superior Site, is the only reasonable approach the Management Board could take to ensure land value protections if a facility is actually sited. The Board does not believe that an LLRW facility will automatically cause a reduction in property values. Many studies of property values around locally unwanted facilities indicate that land values can remain the same, increase, or reduce in value. Reductions that result from the perception of diminished value are generally short-lived, and values return to normal.

17.4D: **The property value guarantee is too narrow – reexamine that.** (+1)
Response: Opinion noted. As a result of public comments on this subject, the Board re-evaluated its property value protection recommendations and decided to retain its recommendations for a half-mile-to-a-mile protection district, triggered by the Board's acceptance of the Candidate Sites Identification Report. The Board reviewed public comments, considered other land value guarantee proposals in other states, and assessed other factors such as worthiness, cost, feasibility, etc. The Board can also utilize some flexibility, if desired, through the negotiating provisions pursuant to operator selection and the Comprehensive Operating Contract executed between the state and the facility operator.

17.4E: **Draft property value protection plan (1/2 mi.) is made with suburban and urban communities in mind. Yet the other siting criteria strongly favor siting in a rural area.**
Response: Opinion noted. The property value protection recommendation of a one-half mile district was not designed to favor rural areas of the state. The half-mile district, as noted in response 17.4B, was selected by the Board as a reasonable distance for such a district, not due to any definitive conclusion from scientific studies of this phenomenon elsewhere, but due to the Board's understanding of the perception that properties would suffer a property value decline. The criteria in the draft Department of Environmental Protection site criteria regulations could be read to favor less populated areas over higher population densities. However, less populated areas could also be found in communities considered to be "suburban," not just "rural."

17.4F: **The half-mile radius is too small.** (+2)
Response: Opinion noted. See responses to 17.4B, 17.4D, and 17.4E.

17.4G: **The one-half mile protection district, in the case of the Pilgrim plant, is still within their boundary.** (+1)
Response: One long-standing policy in siting unwanted land uses is the consideration of a buffer zone between the undesirable land use and other landowners. However, as this commenter points out, if a buffer zone is large, then few if any landowners may be included in the property value protection district proposed by the Board. While the value of a large buffer zone cannot be disputed, the question of perceived property value diminution for land nearby an unwanted land use continues to be a concern. As is the case in all Massachusetts cities and towns, the municipal Boards of Assessors adjust property values annually, but do not adjust values based upon the nearness to any unwanted land use. Instead, the values are adjusted based on market sales in a given area.

17.4H: **Look at major transportation routes, not just concentric circles.**
Response: The Management Board's proposal for a Property Value Protection District provides a guarantee to all property owners within that area, which could also include properties adjacent to any access roads leading into the site. The Board originally considered the concept of a protection district whose boundaries would be identified on a case-by-case basis, depending upon the individual situation at each candidate site. However, it abandoned that concept, having decided that vagueness of district boundary would not provide the same level of certainty to potentially impacted property owners. The Board still retains flexibility in addressing concerns over potential loss of property value for properties along the major transportation route leading to a site. Such flexibility involves the Board's authority to negotiate provisions of the Comprehensive Operating Contract, which could be utilized to address transportation-related concerns.

17.4I: **There should be guaranteed repurchase of any property within five miles of a facility for five years after operations begin.**(+1)
Response: Opinion noted. The Management Board does not support such a concept, but has included in its Management Plan implementing regulations the authority for the state to have a right of first refusal in property sales that occur within the Property Value Protection District after a superior site is licensed.

17.4J: **Compensation should be paid to property owners in the sited community in advance.**
Response: Opinion noted. Provisions for compensation and impact payments are required pursuant to Chapter 111H. Depending upon the agreements negotiated in a Comprehensive Operating Contract, some compensation may, indeed, be paid in advance of facility operation. However, a property value protection program could not be paid in advance, because the degree of diminution of property values, assuming they were to occur, would not be known prior to facility site selection.

17.4K: **Five years after licensing is not long enough.**(+1)
Response: The Management Board's recommendation provides a longer period of time for property value protection than five years after licensure. The Board's proposal guarantees the value of properties within the protection district of a superior site from the point of the Board's acceptance of the Candidate Sites Identification Report until five years after the facility is licensed. Assuming that detailed site characterization, facility licensing, site acquisition, and construction lasted for a total of 3.5 years, then the property value guarantee program would continue a total of 8.5 years (i.e., five years after licensing).

17.4L: **The time limit should be the date the facility no longer accepts waste.**
Response: Opinion noted. Public perception that a decline in property taxes would occur prompted the Board to establish a program of property value guarantees. Because the Board does not believe a decline will occur, it feels its guarantee of many years (from the time of the acceptance of the Candidate Sites Identification Report through five years after facility licensure, is a reasonable and appropriate time period for this program.

17.4M: **Board is not a good choice for being arbiter or judge in property issues; an independent commission should make the decisions.**
Response: The Board's decision regarding the amount of a property value guarantee payment will be its determination of the difference in value between a parcel "with" or "without" an LLRW facility nearby. That determination will be made on the basis of evaluating two appraisals conducted by individuals qualified to appraise property. The Board will also receive advice from the facility operator. The Management Plan implementing regulations specify the documentation required by a seller in order to be considered for a payment by the Board. Finally, a property owner dissatisfied with the Board's decision can appeal to court.

17.4O: **The property value protection district should be negotiated according to geographic and other local factors.**
Response: During its initial discussions, the Board considered leaving the property value protection district more flexible, to allow for the specific local conditions that might pertain to one site, but not another. Ultimately, however, it selected the half-mile radius from the waste management area as an explicitly defined protection area, aware that its role in negotiating the Comprehensive Operating Contract would provide flexibility in addressing this and other concerns.

17.4P: **Because the facility would not be needless destruction, but only the safe containment of waste, property will not be devalued.**
Response: Opinion noted. While studies of waste management facilities (solid, hazardous, and LLRW) vary as to whether a reduction in property values would occur, and because the Management Board does not believe property would lose value if the types of facilities allowed by Chapter 111H were sited, the Board is cognizant of the public perception that devaluation will occur, and has sought to provide a reasonable means to ensure property value protection.

17.4Q: **Give a one-time annuity to all property owners in the area whose property values go down.**
Response: Opinion noted. See response to 17.4B.

17.4R: **Extend economic protection to businesses; they're not just losing the value of their real estate, they're losing their livelihood. We are in a tourist area. No one would want to vacation near an LLRW facility.**
Response: As noted, the Management Board does not believe that the type of environmentally protective, multi-barrier LLRW facility which would be built in Massachusetts (if a decision were made to initiate siting) would affect the price of property or the value of business. The Board's recommendations for a property value guarantee are distinctive and unusual in Massachusetts law. In addition, property value appraisals take into consideration the uses of land, whether residential, agricultural, commercial, or others.

Businesses currently coexist with residences in various tourist areas of the state; their activities may have increased tourism due to business men and women using hotels, inns, restaurants, gift shops, and other tourist industries. An LLRW facility would likely bring added business trade, as well.

Chapter 18: Liability and Financial Responsibility Rules in Massachusetts

18.8 Recommendations to Ensure the Adequacy of Insurance for LLRW Management

Background:

Because of the potentially long life of an LLRW facility, Chapter 111H includes comprehensive provisions establishing responsibility for facility maintenance and remediation of on-site damage. During facility construction, operation, closure, and post-closure, the facility operator is responsible for maintaining the facility.

In addition, the law requires any person who transports, treats, stores, disposes or otherwise manages LLRW to be held strictly liable for any harm to the person, land, or property of another caused by the release of LLRW or associated toxic materials resulting from such activities. Funds to satisfy third-party claims against a facility operator for such harms must be at least the maximum amount available from the nuclear insurance pools or from other commercial insurers. Additionally, a contingent liability trust account must be available to compensate for third party injuries if all other funds, insurance, and tort compensation have been exhausted. This requirement of multiple layers of financial protection is intended to provide the greatest possible assurance that any injured parties will be compensated fairly, and that no voids will exist in liability coverage.

Because the adequacy of available insurance cannot be determined decisively without reference to the specific activity or type of facility to be insured, the Management Board has recommended that a financial risk assessment be conducted to evaluate: (1) the potential hazards involved in the development, operation, closure, and institutional control of any storage, treatment, or disposal facility that may be sited by the Board; (2) the financial risks associated with those hazards; and (3) the insurance or other financial mechanisms available to provide the necessary protection. In Massachusetts, LLRW disposal is similar to long-term monitorable, retrievable storage. As a minimum, the Board has recommended that any disposal facility operator purchase:

(1) All-Risk Property insurance in an amount equal to the facility's replacement cost, or the maximum amount available;
(2) Comprehensive General Liability insurance with minimum limits of $25 million per occurrence and $25 million in the aggregate;
(3) Environmental Impairment Liability insurance with minimum limits of $10 million, or such greater amounts, up to the maximum loss potential determined by a financial risk assessment;
(4) Nuclear Energy Liability (NEL) insurance, with minimum limits equal to $25 million or the maximum loss potential determined by a financial risk assessment. Since NEL insurance is not currently available in amounts over $25 million, the facility operator should alternatively be required to establish an escrow arrangement equal to the difference between the available NEL insurance limits and the amount required by the Board.

[NOTE: Comments in this section are grouped under six subtopics: general comments; adequacy of funds; site community liability; facility operator liability; state's responsibility during institutional control; and state's responsibility as last resort.]

Public Comments:

(1) General comments

18.8A: Radioactive materials users should have liability forever. (+1)
Response: Chapter 111H requires joint and several liability, as well as strict liability, as long as any LLRW is in the facility. The liability provisions of Chapter 111H are stronger than those of any other state law.

18.8B: If liability were absolute and unlimited, as it is in most other industries, vessel head penetration cracking (VHPC) in pressurized water nuclear power reactors would spark some quick action.
Response: See response to comment 18.8A. VHPC does not relate to LLRW. However, state law does not have the same liability limitations as federal law. Because of the rule of strict liability imposed by Chapter 111H, if a plaintiff could prove that a defendant's conduct in connection with VHPC in a pressurized water nuclear reactor caused any release of, or exposure to, LLRW or associated toxic materials and thereby harmed persons, land, or property, then the courts could determine that the radioactive materials licensee was liable.

18.8C: A disposal facility would not be insurable.
Response: All existing LLRW facilities currently carry insurance, and therefore are insurable. Massachusetts law requires that multiple layers of financial protection be provided to ensure the availability of funds for facility maintenance and remediation, if necessary, and to protect persons, land or property in the case of harm caused by the release of LLRW or related toxic materials. The Management Board has recommended that a financial risk assessment be conducted to determine the precise level of insurance coverage for any disposal facility, but believes that at a minimum, the provisions described in the "background" section, above, should be observed.

18.8D: Liability is another reason the sites should be federally run.
Response: Opinion noted. Massachusetts law includes stringent provisions, including "strict liability" and "joint and several" liability requirements, to ensure the availability of necessary funds for any liability claims.

(2) Adequacy of funds

18.8E: It seems unlikely that even the best estimates by the Board as to inflation, technology, federal requirements, etc. can ensure the adequacy of the LLRW Trust Fund for centuries.
Response: Fortunately, the Management Board has more than one opportunity to establish the level of the LLRW Trust Fund. Massachusetts law requires the Board to annually determine the amount of revenues, to be raised from surcharges imposed on users of the facility, necessary for the trust fund, so that fees collected can be adjusted, if necessary, to ensure that an appropriate level of funds is available to finance the contingent liability account and the institutional control account within the trust fund.

18.8F: General liability limited to $25 million is "peanuts."
Response: Comprehensive General Liability (CGL) insurance is only one type of liability insurance designed to compensate third parties for personal injuries and off-site property damage. Moreover, in the case of an LLRW facility, it may be the least important type of insurance, since it excludes environmental damages and nuclear hazards, which are covered by Environmental Impairment Liability (EiL) and Nuclear Energy Liability (NEL) policies, respectively. Typical claims against a CGL policy might pertain, for example, to an automobile accident involving a facility vehicle, or to a business invitee's slip and fall on the premises. Ordinarily, a CGL policy with limits of liability of $25 million per occurrence should be considered adequate. As the Management Plan notes, the $25 million requirement is equal to the highest requirement imposed by any other state.

If the siting process begins, the Board recommends a financial risk assessment to determine the precise levels of environmental Impairment liability insurance needs. In addition, Chapter 111H requires the establishment of an LLRW Trust Fund to be used to pay compensation for injuries to persons, land or property resulting from LLRW management.

18.8G: **Eventually, lawsuits from victims (and their survivors) of unhealthy disposal practices would far exceed the costs (to generators) of better-supervised disposal.**
Response: Opinion noted.

18.8H: **There are examples in every sector of our economy where damage has occurred, and the taxpayers are being asked to pick up the bills. This will be no different.**
Response: Massachusetts law makes LLRW generators jointly and severally liable for any harm to persons or property, for as long as the waste is in the facility. They are also strictly liable. The provision of an LLRW Trust Fund to ensure the availability of funds for contingent liability and maintenance and remediation during institutional control – all to be raised through surcharges from LLRW generators – is intended to avoid the need for any funding from taxpayers. If still more funds were needed, the Massachusetts taxpayer would be the source of last resort, under Chapter 111H.

18.8I: **Generators should all contribute to a bond to make sure the facility is operated and maintained properly.**
Response: That is precisely what Chapter 111H requires.

18.8J: **Just the liability costs would be termed unreasonable for the generators to begin with.**
Response: Other states that are requiring generators to finance facility liability insurance have not seen LLRW generators make this argument. Generators are already paying for liability premiums for the two operating disposal facilities at Hanford, Washington, and Bamwell, South Carolina.

(3) Site community liability

18.8K: **Board should investigate whether a site community becomes liable at all in the event of an accident at the facility. Please at least mention this problem in the Management Plan.**
Response: The Board's legal counsel has reviewed this issue, and believes a site community would not be liable in the event of an accident at the facility, unless such accident were caused by the negligence of the site community's actions. Counsel is preparing a formal memo on this subject for the Board's review. The Board agrees that this issue should be mentioned in the Management Plan, and will be included in the Plan's revision.

18.8L: **Management Plan should state clearly that the host community will be exempted from any and all liability, legal fees, and other costs associated with any problems at the facility.**
Response: See response to comment 18.8K.

(4) Facility operator liability

18.8M: **Corporations can go bankrupt. (+3)**
Response: Opinion noted. Because the framers of Chapter 111H wanted to be certain of the availability of funds for the entire life of a facility, they Included a provision requiring the Board to annually review the fees collected for facility operation, maintenance, closure, and institutional control. The statute also requires that the annual submission to the Board of the operator's proposed fee schedule be "accompanied by a certified audit of gross operating receipts," and that all books and records of the operator "shall be subject to audit."

18.8N: **If the first operator goes bankrupt, it is not realistic to expect another corporation to come in and take over the liability for environmental damage on the site. And user fees will not be enough to cover cleanup costs.**
Response: Opinion noted. The Management Board believes the protections in Chapter 111H and its Operator Selection Criteria regulations will prevent such an occurrence. The Board is required to annually review the collection of fees to cover on-site and off-site remediation, if necessary.

18.8O: **If you ask for a bond to cover the costs of cleanup due to negligence, no business will begin the process.**
Response: Companies that are experienced in providing LLRW management services, including those that operate existing LLRW disposal facilities, are expected to, and have agreed to, provide for any necessary facility cleanup.

18.8P: **All companies involved in waste have such abysmal records.**
Response: Opinion noted. One of the reasons that government is involved in LLRW management is to ensure that the users of radioactive materials that generate LLRW, as well as the companies involved in storage, treatment, disposal, transportation, and other LLRW management activities, are regulated to avoid damage to public health and the environment, and to force the responsible parties to mitigate any damage, if it were to occur.

18.8Q: **Many waste companies have ties to organized crime.**
Response: Opinion noted.

18.8R: It behooves members of the Board to learn about the Sacramento Municipal Utility District, which had to step in when a nuclear power plant went bankrupt.
Response: Opinion noted. See response to comment 18.8K.

(5) State's responsibility during institutional control

18.8S: It is greatly disturbing that the law specifically exempts liability claims against the operator once the state takes over institutional control, unless the operator has engaged in willful misrepresentation or fraudulently concealed information about the facility. Thus, if the operator has cut corners to maximize profits, or has made poor management decisions during the operational phase of the facility, but has not concealed anything, the public gets stuck with any later problems.
Response: It would, indeed, be more than disturbing if the web of requirements and protections in Chapter 111H failed to enable the Management Board and the Massachusetts Department of Public Health (DPH) – as the chief state regulator of the facility – to identify poor management decisions that could lead to environmental or public health problems during institutional control. The Board and DPH, as well as local citizens including the Board of Health and others, will be responsible to monitor the activities of the facility operator to ensure that "corners" are not "cut."

18.8T: Not convinced the scheme for private operation followed by public institutional control is the strategy which best advances the public interest. Why should the most profitable phase be given over to a private company, while the most costly and burdensome phase is given over to the public?
Response: Because of the uncertainty of a private company/operator existing as a corporate entity for the entire period of institutional control – which may last several hundreds of years – federal law and regulations require that state government assume control to ensure that necessary maintenance and remediation are completed over that entire period. However, the Board notes that a corporate or institutional entity can exist, as Harvard University has existed, for hundreds of years.

18.8U: Unfair to place the burden of liability on future generations of MA taxpayers – huge amounts of money could be involved.
Response: Opinion noted. See response to comment 18.8H.

(6) State's responsibility as last resort

18.8V: The section on the state taking liability as a last resort should be rephrased so it does not imply that the cost of any federally administered cleanup would be passed right back to the state. (+1)
Response: The Management Plan will be rewritten to clarify this point.

18.8W: State should not volunteer its own liability in light of the take-title decision.
Response: Opinion noted. The provision of Chapter 111H that enables the Commonwealth to serve as the mitigator of last resort, only if all insurance coverage and federal funds have been exhausted, was included by the drafters of Chapter 111H to provide a guarantee to a site community that the state would always be available to ensure the proper siting, development, operation, closure, post-closure, and institutional control of a facility. In other words, the state would not "walk away from" the responsibility of protecting the public's health and the environment.

Operator Selection Regulations (845 CMR 3.00)

Background:

The Operator Selection Regulations govern the selection of operators of a LLRW storage, treatment, or disposal facility, if any are determined by the Management Board to be necessary to site in the Commonwealth. The criteria and procedures in the regulations must allow any site community to select the operator and technology (or technologies) to be utilized at the facility, that best ensure proper facility operation, in order to protect public health, safety, and the environment. The regulations include financial, technical, and management criteria, and establish procedures to determine that an operator possesses sufficient reliability, expertise, and competence to operate such a facility.

3.02 Definitions

Public Comments:

3.02A: **Add "Abnormal Occurrence," as defined in Section 208 of the Energy Reorganization Act of 1974, as an unscheduled incident or event which the NRC determines is significant from the standpoint of public health or safety [or updated].**
Response: This phrase does not currently appear in the regulations, and therefore does not yet require a definition. The term is defined in section 208 (42 U.S.C. 5848) as "an unscheduled incident or event which the [Nuclear Regulatory] Commission determines is significant from the standpoint of public health or safety." The term will be included within the definition of "accident," as follows:

> "Accident," any abnormal occurrence or other event arising from the storage, treatment, recycling, or disposal of waste that causes a discharge or dispersal of waste or elements contained in the waste from its intended place of confinement."

In addition, the definition of abnormal occurrence will be added to section 3.02.

3.02B: **Add "Accident Probabilities," as risk assessment techniques used to identify the relative importance of various contributors to potential accident risks from all elements of the handling, transporting, storage, and disposal of LLRW.**
Response: This phrase does not currently appear in the regulations. The Board has recommended that DPH incorporate this concept into section M.25 of its regulations (Technical Analyses).

3.02C: **Add "ALARA," as low as reasonably achievable, requiring the development and implementation of programmatically maintained occupational radiation exposures.**
Response: This phrase does not currently appear in the regulations. However, it is included in the Part M regulations, which are referenced numerous times.

3.02D: **Add "Atmospheric Dispersion," dispersion of suspended particles in the airflow patterns around the LLRW site and off the site.**
Response: This phrase does not currently appear in the regulations. The Board has recommended that DPH incorporate this concept into section M.25 (Technical Analyses) or M.31 (Environmental Monitoring) of its regulations.

3.02E: **Add "Emergency Response Planning," required planning; training courses; distance and time and release characteristics; plume (airborne, water, or other) exposure pathways; involvement of NRC, DOT, EPA, and local government and emergency response personnel; and public access to all stages and record-keeping.**
Response: This phrase does not appear in the regulations. The Board will add a requirement to section 3.13(2)(b) that the applicant submit information on emergency response planning, and the phrase will be added to the definitions. The suggested details of an acceptable plan, however, seem more appropriate to be included in the Part M regulations. The Board has recommended that DPH incorporate these details into section M.44 of its regulations (Contingency Plan for Facility Operation).

3.02F: **Add "Environmental Protection," including the best of the Clinton Administration input.**
Response: The term "environmental protection" appears in section 3.13(1)(c), which restates the statutory requirement that a mixed waste facility must achieve the same degree of environmental protection as would be required under the hazardous waste regulations. In addition, the objective of protecting the environment is stated in section 3.01(1) (Overall Objectives), 3.11 (Criteria for Operator Certification) and 3.28 (Written Response to Questions and Requests). The comment offers no definition of the term, and it is unclear whether one is desirable, since this might be better left to the Board's interpretation in a particular circumstance.

3.02G: **Add "Financial Liability and Qualifications," forthright financial records/histories of the involved corporate entities, and planning for financial liability. Also, public disclosure and continuous public access to the documentation for the preceding.**
Response: This phrase does not appear in the regulations. The Financial Criteria for Operator Certification contained in section 3.12 appear to address the substance of this comment. Section 3.22(3)(e) requires a certification of the truthfulness and accuracy of the information submitted. Section 3.21 provides that all information submitted is to be available to the public.

3.02H: **Add "Occupational Exposures," as active policy design and implementation for workers' least exposure to radioactive elements in the workplace, or in the handling and temporary storage and transportation of them. Also maintenance of state-**

of-the-art protections for handlers/employees involved with the LLRW facility. Also inclusive record-keeping of occupational exposures, including transient-worker radiation protection and record-keeping. Also that the families of the workers and their exposure to "take-home" radiation be considered and included in both planning for least exposure and in record-keeping.
Response: The term "occupational exposures" appears in section 3.13(2)(b)(3), which requires an applicant to describe the principal facility design features pertaining to occupational exposures. The suggested details seem more appropriate for the Part M regulations, and the Board has recommended this to DPH.

3.02I: **Add "Occupational Health Standards," to support the greatest safety and concern for the workers and their families and the community. Present standards may be upgraded by the Clinton-Gore Administration, and such enhanced quality is to be welcomed and incorporated.**
Response: This phrase does not appear in the regulations. Section M.24 (Specific Technical Information) and M.29 (Standards for Issuance of a License) of DPH's regulations seem to address the concerns expressed in the comment.

3.02J: **Add "Operating Experience," encompassing professional and forthright tracking of the LLRW site operations and openness to public disclosure, including systematic and publicly accessible evaluation programs.**
Response: This phrase does not appear in the regulations. The Technical and Management Criteria for Operator Certification contained in sections 3.13 and 3.14 appear to address the substance of this comment. Section 3.14(1)(1) requires a demonstrated commitment to public participation as a condition of certification.

3.02K: **Add "Personnel," every level of employee connected with payroll at or on the way to the LLRW site, including clerical and part-time or temporary employees; all to have unionizing rights and whistle-blower rights, without penalty.**
Response: The term "personnel" appears frequently in the regulations. In all but one instance, it is used as part of the term "key personnel," which is a defined term. Section 3.22(3)(a) does refer to "safety personnel," in the context of requiring an applicant to describe where such personnel are located in the firm's management structure. Section 3.14(2)(e) currently requires the applicant to submit information regarding its "whistle-blower" protection policies, but does not itself provide for such protection. The Board has recommended to DPH that such protection be provided in Part M. There is currently nothing in any of the regulations governing unionizing rights.

3.02L: **Add "Safeguards," including an incident response center, a publicly accessible information system, inspections, material accounting, personnel clearances, physical protection equipment, sabotage protection, reporting, regulations, research, security guard qualifications, standards, upgrading, and any other factors the Board deems suitable.**
Response: This phrase does not appear in the regulations. The Board has recommended that DPH incorporate the details of this comment into section M.15 of its regulations (Facility Design).

3.02M: **Add "Site Security," involving participation of the community in which is located any or all of the LLRW site, or participation of any community affected.**
Response: This phrase does not appear in the regulations. A requirement that information regarding facility security be submitted could be added to section 3.13(2)(b)(3). However, the suggested details seem best addressed in the Part M regulations. The Board has recommended that DPH incorporate the substance of this comment into section M.41 of its regulations (Facility Operations).

3.02N: **Add "Systematic Evaluation Program," to be designed by the Board with the site operator's cooperation and to be accessible by the public at all stages and responsive to the public interest.**
Response: This phrase does not appear in the regulations. To the extent that the comment refers to environmental monitoring of a facility, the Part M regulations address the concerns expressed in considerable detail.

3.02O: **Revise the definition of "Pattern of Major Violations" to do away with the requirement that the violations have to involve "substantially similar factual allegations, defense or mitigation claims" in order to be considered as part of a pattern of major violations. Companies that repeatedly have such violations, based on two or more court judgments, etc., should not be certified, regardless of whether or not they have the habit of fouling up in the same way or making up the same old excuses.**
Response: Section 3.14(a)(1) states that an operator may not be certified if it has a "pattern of major violations" of public health, safety, or environmental laws. The draft definition seeks to define a "pattern" in terms of similarities between or among major violations, either in terms of the allegations, defenses or mitigation claims. The regulation will be revised to specify that two unrelated major violations are enough to constitute a pattern.

3.12 Financial Criteria for Operator Certification

Public Comments:

3.12A: **Proposed regulations concerning surety arrangements for operators of a disposal facility could pose an insurmountable financial burden to the operator and/or the generators if not revised. Substantial assistance from the Commonwealth will be required to meet the start-up capital requirement.**
Response: Clearly the Board does not wish to impose insurmountable financial burdens if it can protect public health, safety, and the environment without doing so. However, industry representatives who reviewed the operator selection criteria prior to their being proposed as the official draft did not agree that the burdens were necessarily insurmountable.

3.12B: **Board should have some business lawyers review the provisions on liability/legal protection for the state in the event that a site operator experiences financial problems.**
Response: The provisions of Chapter 111H on which the Operator Selection Regulations are based have been reviewed by a number of experts in this area, including the Inspector General's office. The Board has requested reviews by other financial experts and business attorneys, as well as the Attorney General's office.

3.14 Management Criteria for Operator Certification

Public Comments:

3.14A: **In general, this section is a vast improvement over the vague language in the state's Hazardous Waste Facility siting regulations. Hopefully, it will help the state avoid costly errors such as the Recontek experience.**
Response: Opinion noted.

3.22 Request for Proposals

Public Comments:

3.22A: **Applicants should be required to submit the complete list of information given in Chapter 111H, section 15, plus additional information. Draft 845 CMR 3.22(2)(a) begins the list from section 15, but does not list it completely. That CMR section should be revised to include all information listed in the Act, and additional information necessary to thoroughly investigate the prior history of the applicant:**
"(a)
(1) The name, address and phone number of the Applicant, its principal owners, affiliated entities and its proposed subcontractors, and all other names by which those parties have done or are doing business, and
(2) Detailed organizational information for the Applicant, its principal owners, affiliated entities and its proposed subcontractors including their legal structure, ownership and control, and
(3) The background and qualifications of the Applicant, its principal owners, affiliated entities and proposed subcontractors, and of all officers, directors, partners, and principal owners of each such firm and of the key personnel to be utilized in the performance of any contract with the Board, and a description of the locations and operating experiences of existing or former operations of such persons, and
(4) The history of compliance with, and any violations of federal, state or local requirements by such persons in any jurisdiction in which they or any of them have done business, and any felony convictions of such persons..."
Response: Although everything in section 15 appears somewhere in the regulations, the Board will revise the regulations so that the list appears in one place.

3.22B: **Section 845 CMR 3.22(2)(b) should read: "...set forth in 845 CMR 3.11 through 3.14." The draft only goes through 3.13. Similarly, 845 CMR 3.22(4) should read: "...to determine whether the Applicant satisfies the financial, technical and management criteria set forth in 845 CMR 3.11 through 3.14 inclusive. Currently, it reads, "...through 3.13 inclusive.**
Response: The comment is correct, and the section will be revised accordingly.

3.22C: **It would help applicants if Section 3.22 listed some of the information they must submit (from Section 3.14).**
Response: Section 3.22 will be revised accordingly.

3.22D: **Add to 845 CMR 3.22(2)(b)(3) a requirement for additional information from the applicants concerning past litigation and investigations, e.g., all criminal indictments and past criminal investigations involving the business activities of the Applicant, affiliated entities, principals, and key personnel, and all civil judgments, and past civil litigation, against or involving the business activities of the Applicant, affiliated entities, principals, and key personnel, other than routine litigation incidental to the ordinary course of business.**
Response: The Board will revise the regulations to require this additional information for the five-year period preceding the date of application, with the stipulation that the Board may seek information from before the five-year period if it determines, based on the company's history, that there is a need to seek such information.

3.27 Certified Applicant Interviews and Discussions

Public Comments:

3.27A: **It is not clear at what point the operator is to be selected.**
Response: Under section 3.25(1), the Board certifies applicants. If the applicant has proposed more than one technology, the Board makes a separate certification determination for each technology. Under section 3.29, the Community Supervisory Committee selects the operator from among the certified applicants. The selection of the operator results in the simultaneous selection of the technology to be used. This point will be made clearer in the regulations.

DEPARTMENT OF PUBLIC HEALTH

LICENSING AND OPERATIONAL REGULATIONS FOR LLRW FACILITIES (Part M - 105 CMR 120.800) and

LLRW MINIMIZATION REGULATIONS (Part M1 - 105 CMR 120.890)

MANAGEMENT BOARD COMMENTS ON DEFINITIONS -- PART M

Accident

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan regulations:

> **"any event arising from the storage, treatment, recycling or disposal of waste that causes a discharge or dispersal of waste or elements contained in the waste from its intended place of confinement."**

Strike "industrial" as it appears before "accident" and "accidental" as it appears before "release" in section M.44(a) to avoid any confusion about the intended meaning of this section.
Response: The regulations were modified to respond to this comment.

Act

Since Chapter 111H has been amended a few times since 1987, suggest changing the definition as it appears in section M.3 by striking the phrase "of 1987" and adding "as amended" at the end.
Response: Deleted the entire definition in both Part M and Part M1 and referred to the specific Act in each case, as it appears to avoid confusion between the two applicable Acts -- Chapter 111 and Chapter 111H. Although "Act" is defined in Part M1, it is not used anywhere by itself in the rest of the text.

Active Institutional Control Period

Because this term is defined, but not otherwise used in Part M, suggest striking the definition from section M.3.
Response: This definition has been deleted.

Activity

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan Regulations:

> **"the rate of decay of radioactive material."**

The Part M regulations, however, use the term "activity" to mean other things in a few instances. In order to avoid confusion, we suggest:

- **Changing "activity" to "action" in section M.30(f);**
- **Changing "surface geologic processes and biotic activity" to "biotic or surface geologic processes" in section M.32(d); and**
- **Changing "activity" to "conduct" in section M.82(b).**

Response: This comment was withdrawn by the Management Board in a later memo.

Adverse Effect

Suggest adding a definition of this term to section M.3, to conform to the DEP's Site Suitability Regulations:

> **"an injurious impact which is significant in relation to the public health, safety, or environmental interest being protected."**

Response: The regulations were modified to respond to this comment.

Applicant

Because the Operator Selection Regulations use this term scores of times with a different definition than is implied in Part M, suggest changing "applicant" to "operator" in sections M.10(c) and M.22(b).
Response: Retained "applicant." The applicant is required to meet the qualifications of "Operator" before they can be called "Operator."

Board

In accordance with the Secretary of State's new citation guidelines, suggest changing "section two of the Act" to "M.G.L. c.111H, §2" in the definition of this term in section M.3.
Response: The regulations were modified to respond to this comment.

Chief Executive Officer

In order to make the definition appearing in section M.3 conform to the statute, strike the word "or" after "a town manager."
Response: The regulations were modified to respond to this comment.

Closure

Because the definition of "closure" refers to the "permanent termination of...waste acceptance," the phrase "temporary or permanent closure," which appears in section M.3(p) is awkward. Suggest changing it to "closure or temporary closure." In addition, the phrase "to temporarily or permanently close" should be changed to "to close or temporarily close." Also, suggest changing "closure" in the

last sentence of section M.50(a) to "decommissioning," since the intended meaning differs from the definition in section M.3. Also add a definition of "decommissioning" to section M.3, to conform to the Board's Management Plan Regulations:

> **"the safe removal from service of a process involving radioactive materials or waste, and the reduction of residual radioactivity to a level that permits release of the property for unrestricted use and termination of the license."**

Response: Made the change as suggested, except in M.50(a) where it is preferred to retain the present wording. The concept of "decommissioning" a disposal facility is not considered standard practice nor appropriate.

Closure plan

In accordance with the Secretary of State's new citation guidelines, suggest changing "section 16 of the Act" to "M.G.L. c.111H, §16" in the definition of this term in section M.3.

Response: The regulations were modified to respond to this comment.

Community Supervisory Committee

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan Regulations:

> **"a committee, established pursuant to M.G.L. c111H, §21, to facilitate the participation of a community, in which a candidate site is located, in the activities established by M.G.L. c111H."**

Response: The regulations were modified to respond to this comment.

Comprehensive Operating Contract

In accordance with the Secretary of State's new citation guidelines, suggest changing, "section 33 of the Act" to "M.G.L. c.111H, §33" in the definition of this term in section M.3.

Response: The regulations were modified to respond to this comment.

Days

Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

> **"calendar days; provided that in computing time periods such periods shall exclude the day of the event which starts the period running, and further provided that if the last day of a period falls on a Sunday, legal holiday or declared state of emergency day, such period shall be extended to the close of business on the next business day."**

Response: The regulations were modified to respond to this comment.

Detailed Site Characterization

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan Regulations:

> **"the on-site investigatory and analytical step of site selection established in M.G.L. c111H, §23 and conducted prior to the selection of any superior site."**

Response: The regulations were modified to respond to this comment.

Development

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan Regulations:

> **"all activities undertaken with respect to a low-level radioactive waste facility during the period commencing with the selection of any superior site pursuant to M.G.L. c.111H, §23 and continuing until the commencement of facility operation pursuant to M.G.L. c.111H, §39."**

Response: The regulations were modified to respond to this comment.

Disposal

Suggest inserting the term "low-level" before "radioactive" in the definition of this term as it appears in section M.3. Also, because this term appears in section M.80(b) with a different intended meaning than what appears in section M.3, suggest changing the words "the disposal" in section M.80(b) to "disposing."

Response: The regulations were modified to respond to this comment.

Engineered Barrier

The term "DPH performance objectives," which appears in this definition should be replaced with a citation to sections M.11 through M.16.

Response: The change was made as follows: "...the performance objectives set forth in sections M.11 through M.14."

Environmental Monitoring Program

In order to avoid confusion, insert the word "Department" before "environmental monitoring program" in section M.33(b)(1).

Response: The change was made as follows:

> "..the Operator environmental monitoring program and Department environmental monitoring program...have yielded comprehensive baseline data."

Explosive material

The only use of this term in Part M is in the definition of "pyrophoric liquid." Since it was suggested below that the definition should be omitted, the definition of "explosive material" can also be omitted.

Response: The regulations were modified to respond to this comment.

Facility

In accordance with the Secretary of State's new citation guidelines, suggest changing, "the Act" to "M.G.L. c.111H" in the definition of this term in section M.3.

Response: The regulations were modified to respond to this comment.

Facility License
In accordance with the Secretary of State's new citation guidelines, suggest changing, "section 31 of the Act" to "M.G.L. c.111H, §31" in the definition of this term in section M.3.
Response: The regulations were modified to respond to this comment. See comment on facility.

Generator
Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

> "a person, including a broker, who produces low-level radioactive waste."

Response: The regulations were modified to respond to this comment.

Ground water
Suggest adding a definition of this term to section M.3, to conform to DEP's Site Selection Regulations:

> "water below the land surface in a saturated zone, including perched ground water."

Response: The regulations were modified to respond to this comment.

Hazardous waste
The only use of this term is in the definition of "mixed waste." Since it is suggested below that the definition of "mixed waste" be amended to drop the reference to "hazardous waste." Therefore, this definition can be omitted.
Response: The regulations were modified to respond to this comment.

Hydrogeologic unit
This term is defined in section M.3 but does not appear elsewhere in Part M. The definition can therefore be omitted.
Response: The regulations were modified to respond to this comment.

Institutional control account
Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

> "an account within the Low-Level Radioactive Waste Trust Fund established in M.G.L. c111H, §41 for the purpose of paying institutional control costs pursuant to M.G.L. c.111H §§9 and 47."

Response: The regulations were modified to respond to this comment.

Low-level radioactive waste
Suggest amending this definition slightly to conform to the Board's Management Plan Regulations and the Secretary of State's new citation guidelines:

> "radioactive material that (1) is neither high-level waste, nor spent nuclear fuel, nor by-product material as defined in section 11(e)(2) of the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2014(e); and (2) is classified by the Federal Government as low-level radioactive waste, but not including waste which remains a Federal responsibility, as designated in section 3(b) of the Low-Level Radioactive Waste Policy Act, as amended, 42 U.S.C. §2021c(b), as in effect as of December 8, 1987."

Response: The regulations were modified to respond to this comment.

Low-level radioactive waste Trust Fund
Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

> "a trust fund established pursuant to M.G.L. c.10, §35H which shall consist of surcharges collected from users of the low-level radioactive waste facility in an amount determined by the board on an annual basis, which shall be used to meet the obligations set forth in M.G.L. c.111H, §§9 and 47."

Response: The regulations were modified to respond to this comment.

Mass wasting
Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

> "the movement of rock or soil material under the influence of gravity either as the movement of the product of weathering down a slope or as mass movement of rock or soil along joint planes or bedding planes. Mass wasting includes but is not limited to creep, mud flows, earth flow, soil flow, rock avalanche, landslide, landslip and slumping."

Response: The regulations were modified to respond to this comment.

Mixed waste
Suggest amending this definition slightly to conform to the Board's Management Plan Regulations:

> "low-level radioactive waste containing material that either (a)is listed in 310 CMR 30.131 through 30.136; or (b)causes the waste to exhibit any of the characteristics identified in 310 CMR 30.120."

Response: The regulations were modified to respond to this comment.

Monitoring
Suggest inserting the word "safety" after "health" to conform to DEP's Site Suitability Regulations.
Response: The regulations were modified to respond to this comment.

Neighboring community
Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

"a community, other than a site community, which, according to the most recent federal census, has at least twenty percent of its population residing within three miles of any superior site."

Response: The regulations were modified to respond to this comment.

Operation

Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

"the control, supervision or implementation of the actual physical activities involved in the acceptance, storage, treatment, disposal or monitoring of low-level radioactive waste at a facility and the maintenance of the facility and any other responsibilities of the operation pertaining to the facility."

Response: The changes was made by an addition as suggested using the exact wording of Chapter 111H.

Operator

Suggest changing "procedure" to "procedures" in the definition of this term in section M.3, to conform to Chapter 111H. Also, in accordance with the Secretary of State's new citation guidelines, I suggest changing, "section 22 and 27 of the Act" to "M.G.L. c.111H, §§22 and 27."

Response: The regulations were modified to respond to this comment.

Passive Institutional Control Period

Because this term is defined, but not otherwise used in Part M, suggest striking the definition from section M.3.

Response: The regulations were modified to respond to this comment.

Public interest

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan Regulations:

"the common welfare, convenience, benefit and necessity of the people of the Commonwealth, including public health, safety and the environment."

Response: The regulations were modified to respond to this comment.

Public meeting

Suggest slightly amending the definition as it appears in section M.3 so that it conforms to Chapter 111H and the Secretary of State's citation guidelines:

"a public hearing, satisfying the requirements of M.G.L. c.30A, §2, in which an agency presents information, responds to inquiries and hears testimony of interested persons."

Response: The regulations were modified to respond to this comment.

Pyrophoric liquid

Because this term is defined, but not otherwise used in Part M, suggest striking the definition from section M.3.

Response: The regulations were modified to respond to this comment.

Radioactive material

Suggest adding a definition of this term to section M.3, to conform to DPH's Part M1 Regulations:

"any solid, liquid, or gas which emits radiation spontaneously."

Response: The regulations were modified to respond to this comment.

Radioactivity

Suggest adding a definition of this term to section M.3, to conform to DPH's Part M1 Regulations:

"the transformation of unstable atomic nuclei with the emission of radiation."

Response: The regulations were modified to respond to this comment.

Radionuclide

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan Regulations:

"an isotope that eventually undergoes spontaneous disintegration, with the emission of radiation."

Response: The regulations were modified to respond to this comment.

Site

Suggest changing "the location" to "a location" in the definition of this term in section M.3, to conform to DEP's Site Suitability Regulations.

Response: The regulations were modified to respond to this comment.

Source Minimization

Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

"minimizing the volume of radioactivity of low-level radioactive waste prior to its generation by such methods as: (1) avoiding unnecessary contamination of items during the use of radioactive materials; (2) carefully segregating radioactive waste from non-radioactive trash; or (3) substituting non-radioactive isotopes or radioisotopes with shorter half-lives where practicable."

Response: The change was made by the addition suggested but using the exact wording of Chapter 111H.

Subsidence

Suggest adding a definition of this term in section M.3, to conform to DEP's Site Suitability Regulations:

"the process by which the earth's surface sinks, either rapidly or slowly, with little or no horizontal motion."

Response: The regulations were modified to respond to this comment.

Superior site

Suggest adding a definition of this term to section M.3, to conform to the Board's Operator Selection Regulations:

"any site selected by the board, after detailed site characterization, pursuant to M.G.L. c.111H, §23."

Response: The regulations were modified to respond to this comment.

Violation

Suggest adding a definition of this term to section M.3, to conform to the Board's Operator Selection Regulations:

"any act or failure to act which constitutes or results in one or more of the following:

(a) engaging in any business or other activity without a license or approval whenever engaging in such business or activity requires such license or approval.

(b) engaging in any activity prohibited by, or not in compliance with, any statute, by-law, ordinance or regulation.

(c) not fully doing, or not doing in timely fashion, anything required by any statute, by-law, ordinance or regulation."

Response: The regulations were modified to respond to this comment.

Volume minimization

Suggest adding a definition of this term to section M.3, to conform to Chapter 111H:

"treatment of low-level radioactive waste after its generation in order to minimize the physical dimensions of the waste and the space required for disposal."

Response: The regulations were modified to respond to this comment.

Waste form

Suggest adding a definition of this term to section M.3, to conform to the Board's Management Plan Regulations:

"those physical and chemical characteristics of waste of primary importance in influencing its stability in a disposal environment."

Response: The regulations were modified to respond to this comment.

Add "Accident Probabilities," as risk assessment techniques used to identify the relative importance of various contributors to potential accident risks from all elements of the handling, transporting, storage, and disposal of LLRW. The Board recommends that DPH incorporate this concept into section M.25 of its regulations (Technical Analyses).

Response: This issue is already addressed in M.25(3) and also is included in the required Safety Analysis Report.

Add "Atmospheric Dispersion," dispersion of suspended particles in the airflow patterns around the LLRW site and off the site. The Board recommends that DPH incorporate this concept into section M.25 of its regulations (Technical Analyses).

Response: This issue is already addressed in M.25.

Add "Emergency Response Planning," required planning; training courses; distance and time and release characteristics; plume (airborne, water, or other) exposure pathways; involvement of NRC, DOT, EPA, and local government and emergency response personnel; public access to all stages and record keeping. The Board recommends that DPH incorporate this concept into section M.25 of its regulations (Technical Analyses).

Response: This issue is already addressed in M.44.

Add "Personnel," every level of employee connected with payroll at or on the way to the LLRW site, including clerical and part-time or temporary employees; all to have unionizing rights and whistle-blower rights, without penalty. The Board recommends that DPH incorporate this concept into section M.25 of its regulations (Technical Analyses).

Response: This issue is addressed in the Massachusetts Regulations for the Control of Radiation.

Add "Safeguards," including an incident response center, a publicly accessible information system, inspections, material accounting, personnel clearances, physical protection equipment, sabotage protection, reporting, regulations, research, security guard qualifications, standards, upgrading, and any other factors the Board deems suitable. The Board recommends that DPH incorporate this concept into section M.25 of its regulations (Technical Analyses).

Response: This issue is addressed in Part M.15 and also in detail in the required Safety Analysis Report.

Add "Site Security," involving participation of the community in which is located any or all of the LLRW site, or participation of any community affected. The Board recommends that DPH incorporate this concept into section M.25 of its regulations (Technical Analyses).

Response: This comment has been responded to and the correction has been made in Part M.15.

MANAGEMENT BOARD COMMENTS ON DEFINITIONS -- PART M1

Act

Since Chapter 111H has been amended a few times since 1987, suggest changing the definition as it appears in section M1.30 by striking the phrase "of 1987" and adding "as amended" at the end.

Response: The entire definition has been deleted in both Part M and Part M1 and reference to the specific Act has been made in each case as it appears to avoid confusion between the two applicable Acts- Chapter 111 and Chapter 111H. Although "Act" is defined in Part M1 it is not used anywhere by itself in the rest of the text.

Activity

Suggest adding a definition of this term to section M1.30, to conform to the Board's Management Plan Regulations:

> **"the rate of decay of radioactive material."**

Response: This comment was rescinded by a later memo from the Management Board.

Board

In accordance with the Secretary of State's new citation guidelines, suggest changing, "section two of the Act" to "M.G.L. c.111H, §2" in the definition of this term in section M1.30.

Response: The regulations were modified to respond to this comment.

Curie

Because this term is defined, but not otherwise used in Part M1, suggest striking the definition from section M1.30.

Response: The regulations were modified to respond to this comment.

Days

Suggest adding a definition of this term to section M1.30, to conform to Chapter 111H:

> **"calendar days; provided that in computing time periods such periods shall exclude the day of the event which starts the period running, and further provided that if the last day of a period falls on a Sunday, legal holiday or declared state of emergency day, such period shall be extended to the close of business on the next business day."**

Response: The regulations were modified to respond to this comment.

Detailed Site Characterization

Suggest adding a definition of this term to section M1.30, to conform to the Board's Management Plan Regulations:

> **"the on-site investigatory and analytical step of site selection established in M.G.L. c111H, §23 and conducted prior to the selection of any superior site."**

Response: The term is not used in Part M1; therefore the addition as suggested was not made.

Development

Suggest adding a definition of this term to section M1.30, to conform to the Board's Management Plan Regulations:

> **"all activities undertaken with respect to a low-level radioactive waste facility during the period commencing with the selection of any superior site pursuant to M.G.L. c.111H, §23 and continuing until the commencement of facility operation pursuant to M.G.L. c.111H, §39."**

Response: The change was not made as suggested. The word is used twice in Part M1-M1.70(b)(i) and (vi) and each time as "development of written procedures..." not with the meaning in the suggested definition. Part M1 regulations apply to all persons who require licenses to work with radioactive materials.

Disposal

Suggest inserting the term "low-level" before "radioactive" in the definition of this term as it appears in section M1.30.

Response: The regulations were modified to respond to this comment.

DPH

In section M1.70(b), suggest changing "DPH" to "the Department's" to conform to usage elsewhere in these regulations.

Response: The regulations were modified to respond to this comment.

Facility

Suggest changing the word, "facility," in section M1.60(e) to "locus," since a meaning different from that used in all the other regulations is intended.

Response: The change was not made as suggested. "Locus" is an unsuitable word in place of "facility", which is exactly right, in this context. However, a new word "waste facility" has been added to the definitions in response to this comment.

Generator Guidance

Suggest changing "Massachusetts Department of Public Health" to "the Department" in definition of this term in section M1.30.

Response: The regulations were modified to respond to this comment.

Hazardous waste

The only use of this term is in the definition of "mixed waste." It is suggested below that the definition of "mixed waste" be amended to drop the reference to "hazardous waste." Therefore, this definition can be omitted.

Response: The regulations were modified to respond to this comment.

Low-level radioactive waste

Suggest amending this definition slightly to conform to the Board's Management Plan Regulations and the Secretary of State's new citation guidelines:

> **"radioactive material that (1) is neither high-level waste, nor spent nuclear fuel, nor by-product material as defined in section 11(e)(2) of the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2014(e); and (2) is classified by the Federal Government**

as low-level radioactive waste, but not including waste which remains a Federal responsibility, as designated in section 3(b) of the Low-Level Radioactive Waste Policy Act, as amended, 42 U.S.C. §2021c(b), as in effect as of December 8, 1987."

Response: The regulations were modified to respond to this comment.

Manifest

Suggest adding a definition of this term to section M1.30, to conform to DPH's Part M Regulations:

"a detailed record of the characteristics and quantities of packaged waste as presented for transportation, treatment, storage, or disposal which usually accompanies waste transfers for these purposes."

Response: The regulations were modified to respond to this comment.

Mixed waste

Suggest amending this definition slightly to conform to the Board's Management Plan Regulations:

"low-level radioactive waste containing material that either (a)is listed in 310 CMR 30.131 through 30.136; or (b)causes the waste to exhibit any of the characteristics identified in 310 CMR 30.120."

Response: The regulations were modified to respond to this comment.

Source Minimization

Suggest keeping the definition in section M1.30, as it appears in Chapter 111H:

"minimizing the volume of radioactivity of low-level radioactive waste prior to its generation by such methods as: (1)avoiding unnecessary contamination of items during the use of radioactive materials; (2)carefully segregating radioactive waste from non-radioactive trash; or (3)substituting non-radioactive isotopes or radioisotopes with shorter half-lives where practicable."

Response: The changes were made as suggested, using the exact wording of Chapter 111H.

MANAGEMENT BOARD RECOMMENDATIONS BASED ON PUBLIC COMMENTS

The Management Board has agreed that the revision of its LLRW Management Plan will stress the importance of source/reduction/elimination, as the principal objective of any Massachusetts minimization program. Those revisions in the Plan will include changes to Appendix 10A of VOLUME II: "Management Board Recommendations to DPH Concerning Source and Volume Minimization and Storage for Decay," and a statement of the Board's support for an objective of "zero LLRW production" in the future. To that end, the Board urges DPH to:

- Provide greater emphasis in M1.50: Objectives to source reduction/elimination, including statements that:
  - minimization of radioactive sources is the principle objective of the Department's minimization program;
  - all radioactive materials users should strive to achieve "zero production" of LLRW;
  - frivolous or unnecessary uses of radioactive materials should be avoided, especially if non-radioactive alternatives are available; and, that
  - a statement be added to M1.50(e) identifying the objective of substituting short-lived radionuclides or non-radioactive materials for long-lived radionuclides, where possible.
- Amend M1.60: Statement and Plan Requirements, and M1.70: Waste Minimization Plan Content, to include references to "source reduction/elimination" along with the existing references to "waste minimization".

Response: These changes were made to the regulations, as appropriate, except that the phrase "a major objective" was used in place of "the principle objective" that was suggested.

The Management Board expressed concern that the draft DPH minimization regulations do not specify what standards or criteria the Department will apply in approving a user's minimization plan. The Board recommends that DPH modify its regulations to include greater specificity and some quantitative goals.

Response: The regulations were purposely designed to encourage users to strive for the highest amount of minimization that their individual processes, procedures, and resources will allow. It was felt that, by setting specific numbers or quantitative goals, an artificial restriction might be placed on users that might have otherwise aimed toward greater minimization activities.

The Board urges DPH to evaluate the Commonwealth's regulations pertaining to the Toxic Use Reduction Act (TURA), M.G.L. c.21I, and to include in its source/volume minimization program regulations those provisions that may assist the Department in assessing minimization plans for their completeness. The Board has agreed to include a brief discussion of the TURA philosophy in its Management Plan revisions, as well.

TURA requires companies that use toxic chemicals to develop plans to reduce or eliminate processes using such chemicals. This law does not set performance standards or discharge limits for the use of hazardous chemicals, but requires individual companies to set their own goals. However, it does give three state government entities authority to monitor groups of toxic chemical users, categorized by similar chemical uses, and to make recommendations to an Advisory Council that can develop "Priority User Segments" in order to allow the targeting of minimization efforts on specific chemicals, or specific operations.

The Management Board recommends that DPH modify its regulations to follow to TURA philosophy, whereby radioactive materials users would set their own goals, and DPH would evaluate the accomplishment of categories of similar companies. The Management Board believes that the use of the "Priority User Segments" concept will aid DPH in evaluating similar segments of radioactive materials use, to ensure that one licensee's minimization accomplishments can be translated to other licensees in an analogous category of use.

The Board also recommends that DPH consider establishing an Advisory Council similar to that used under the TURA program, to assist in evaluating minimization plans and their effectiveness. In addition, the Board urges that when DPH makes comparisons of "alike" licensees, each user's history of source and volume reduction should be considered.
Response: The Department is aware of the TURA program and philosophy, and has used some of the TURA philosophy in designing the M1 regulations, however, the Department is also aware that the TURA regulations are new and have not had the benefit of demonstrating whether they will be the best vehicle for accomplishing their intended purpose. Of special note is the fact that the M1 regulations are designed so that users can share ideas and strategies for source and volume minimization with one another, similar to the "priority user segments" of the TURA regulations.

The Board recommends that DPH eliminate the 100-cubic-foot threshold level in draft M1.60(b) that triggers the requirement for the development and implementation of a minimization program and a "detailed plan." The Board notes that Chapter 111H does not provide a "small quantity" exemption for minimization plans; all nine Board members are in agreement that equal emphasis should be placed in the DPH regulations on large and small LLRW generators' requirements to perform minimization.
Response: This threshold level was placed in the proposed regulations at the suggestion of the Board during the early reviews of the draft regulations. The Department agreed with the Board's recommendation at that time, namely that, since 96 percent of the waste from Massachusetts generators shipped to disposal sites in 1991 came from "large" generators (those with 100 cubic feet or more of waste), the DPH may wish to consider requiring a simplified commitment for "small generators" and a full plan for larger generators. The Department still feels that this is the proper approach.

The Board recommends that the DPH minimization regulations include a statement regarding the Commonwealth's anti-BRC (below regulatory concern) policy, since that policy is a provision of Chapter 111H. The Board believes radioactive materials users should be reminded of the Commonwealth's legal stance on this issue.
Response: A statement concerning this provision has been added to reflect the Commonwealth's legal stance, however, the specific reference to the word "below regulatory concern" has not been used, since this term is no longer in use by the NRC.

The Board has agreed to include in its Management Plan revisions a discussion of what half-lives in radioactive materials are allowable for storage for decay. It recommends that the DPH minimization regulations include a similar provision. The Board notes that NRC currently allows a LLRW generator to store for decay materials with half-lives of up to 65 days and further, up to 120 days, provided that NRC receives appropriate justification for storage for decay of the longer-lived materials.
Response: A statement has not been added to the regulations, since it is felt that all generators should store for decay to the maximum extent possible. Further, It was felt that a specific number of days should not be specified, since experience has shown that the recommended period has changed more than once in the recent past. However, a discussion of storing for decay to the maximum extent possible is included in the Guidance Document.

The term "activity" is defined in the Management Board's proposed 845 CMR 1.02 as "the rate of decay of radioactive material."

The term "radioactivity" is defined in DPH's proposed Part M1 regulations as "the transformation of unstable atomic nuclei by the emission of radiation."

The term "activity" is defined in NRC's regulations, 10 CFR §20.1003, as "the rate of disintegration (transformation) or decay of radioactive material."

In the course of the Management Board's review of public comments on its Management Plan, the suggestion has been noted that the term "radioactivity" should be used whenever possible, rather than "activity." I have recommended that this suggestion be accepted, both in the Management Plan and the associated LLRW regulations, and that radioactivity be defined in each set of regulations as "the rate of disintegration (transformation) or decay of radioactive material."

In particular, therefore, I recommend that the definition of "radioactivity" currently appearing in DPH's proposed "Part M1" regulations be modified slightly to conform to the NRC's definition of "activity", but that the term "radioactivity" continue to be used. The modified definition should be added to the "Part M" regulations.

To assist you in considering this recommendation, I have identified the following sections that use the term "activity", where "radioactivity" would be appropriate:
"Part M" regulations: M.24(O); M.31(g)(2)(iii)
"Part M1" regulations: M1.70(b)(3)

I have also identified the following sections that use the term "radioactivity":
"Part M" regulations: M.11; M.13; M.25(a)(1); M.44(a); M.82(a)(1)
"Part M1" regulations: M1.70(b)(9)
Response: The terms "radioactivity" and "activity" are not interchangeable, since "radioactivity" means disintegration (transformation) and "activity" denotes "the rate of." The definition used in these regulations is correct and consistent with that used by NRC and the Suggested State Regulations for Control of Radiation.

There should be detailed, thorough baseline health studies done for every targeted community. This will eliminate any community that already has high levels of background radiation and will also allow comparisons if there is a future health impact from the facility. (+1)
Response: Chapter 111H does not contain a requirement for baseline health studies for "every targeted community." However, the DPH licensing regulations (Part M) contain such a requirement for the superior site community. Section M.31 requires a facility operator to submit an environmental monitoring plan, which must include a "preoperational monitoring program" in addition to conducting monitoring during the facility development, construction, operation, closure, and post-closure observation and maintenance periods. Also, section M.31 (e) requires the environmental monitoring program to be designed to "... provide data to allow evaluation of facility impacts on public health, safety and the environment...."

The language in section M.31 has been rewritten to reflect the intention of the Department that the environmental monitoring program must include a baseline health study following the design requirements for such a study that are currently being used by the Department's Bureau of Environmental Health Assessment, and this baseline health study must include not only the site community but also any affected community. The language will also include a statement that the operator of the facility will be responsible for insuring that this baseline study is performed and will be responsible for the costs incurred by the Department in conducting this study.

Generators should pay for health testing in sited communities every five years, and should be responsible for any increased health problems. They should be required to establish an annuity to cover all costs in case they go out of business.
Response: The language in section 120.831 (M.31) has been rewritten to reflect the intention of the Department that the operator will also be responsible for insuring that comparison health studies (i.e., comparing present health status in the community against the baseline health data) are performed in the sited community and any affected community every five years. The purpose of these comparison health studies is to assess whether the facility operations have caused any adverse health effects in the sited and affected communities.

On the issue of requiring an annuity to cover all costs in case generators go out of business, the Department does not feel that a requirement of this nature belongs in Part M, however, Chapter 111H mandates that the funds necessary to cover all costs of closing a facility must be set aside by the facility operator. Those resources must include financial assurance funds to cover liability claims that potentially could be made.

GENERAL PUBLIC COMMENTS

DPH and MEMA are in no position to take on another major task like LLRW would require. They have been struggling with implementation of EPA's SARA Title III since 1986 and have not completed one quarter of the task because of lack of personnel and funding.
Response: DPH is statutorily mandated to develop regulations under MGL 111H and will have the necessary personnel and funding in place to implement these regulations. MEMA is not involved in this process as the commenter has inferred,

Commends the Board and DPH for proposing a minimization program.
Response: The comment is so noted and no response is necessary.

The Board should be responsible for source reduction, not the DPH.
Response: Chapter 111H mandates that the DPH, not the Board, is responsible for regulating source reduction.

The Board, DEP, and DPH should keep in mind that the federal agencies may set in motion legally mandated processes that prescribe the actions which site owners or operators must take. The Board, DEP, and DPH should not create duplicative or conflicting regulations for sites undergoing decommissioning now.
Response: The federal Low Level Radioactive Waste Policy Act (LLRWPA) of 1980 clearly established the role and responsibility of states to regulate these activities and all three agencies have taken into consideration existing federal regulations in the development of the proposed state regulations.

The proposed regulations and additional attention to eliminating duplication appear satisfactory.
Response: The comment is so noted and no response is necessary.

Is your intention something similar to the Resource Conservation and Recovery Act, where we're going to have tracking of hazardous waste from cradle to grave? If so, does DPH have the necessary wherewithal to manage this type of system?
Response: Yes, the process does involve a "cradle to grave" tracking system, and Chapter 111H provides the mechanism for insuring funding of the DPH activities required under these proposed regulations.

Why is the DPH the lead agency and not EPA?
Response: The implementation of Chapter 111H is a state responsibility, and EPA is a federal agency. DPH was designated as the lead agency in Chapter 111H based on its experience and expertise, as well as its legislatively mandated responsibilities in protecting public health and safety from all sources of radiation within the Commonwealth.

We hear that the DPH in applying for Agreement State status with NRC will be able to protect the citizens in a more protective manner. It is not clear that this is true, because it seems that NRC requires strict compatibility in the setting of dose limits.
Response: The issue of compatibility with the NRC in setting dose limits is one of not being able to set dose limits higher than those of NRC, but does not restrict a state from setting dose limits lower than those set by NRC.

The minimization booklet was general. Those programs have to be specific to the industries. If you are serious about the nuclear issue, there has to be an absolutely structured program for educating the general public about this issue.
Response: The minimization regulations were designed to apply to all users of radioactive materials, and it is the intention of the DPH to develop a Guidance Document, which will supply specific guidance on how different industries, as well as other users, can design programs so as to meet the requirements of these regulations. The comment about educating the general public is very appropriate, and the DPH will endeavor to develop a structured program to address this comment.

A very important flaw in the Management Plan concerns the definition of a waste facility. On page M-4 of the Plan, "Facility" is defined as "a parcel of land, together with the structures equipment and improvements thereon or appurtenant thereto, which, pursuant to Chapter 111H, is being developed, is used, or has been used for the treatment, storage or disposal of low-level radioactive waste; but does not include any property used for temporary storage of low-level radioactive waste in sealed containers by a broker." The very broad nature of this definition impacts on every radioactive material user in the Commonwealth. Each radioactive material user in the Commonwealth will be required to comply with the environmental assessment requirements imposed by this Plan, including the commitment of the Department to conduct environmental surveillance around every facility in the state, approximately 150, that potentially store low-level radioactive waste. This includes the state personally inspecting and releasing every low-level radioactive material waste shipment throughout the state. At the present time the Massachusetts Department of Public Health does not yet have the funding or the resources to handle Agreement State status. It is unlikely they will have the resources to cover all low-level radioactive waste shipments in the Commonwealth.
Response: These regulations apply to a "facility" as defined in Chapter 111H, a facility specifically designed for the treatment, storage, or disposal of low-level radioactive waste.

The Plan, and in particular the regulations pertaining to low-level radioactive waste facilities, must be rewritten to more clearly define the difference between a public low-level radioactive waste repository and a licensed program that authorizes the handling and storage of low-level radioactive waste prior to shipment to the Commonwealth's repository. A reorganization of the waste regulations themselves will then be necessary to make it clear what governs the repository and what governs the individual radioactive material users.
Response: These regulations apply to a "facility" as defined in the Low-Level Radioactive Waste Management Chapter 111H and means a facility specifically designed for the treatment, storage and disposal of low-level radioactive waste.

Finally, it is understood that Massachusetts will need to become an Agreement State in order to license a waste repository in the Commonwealth. This would also establish a licensing program for all users of byproduct material in Massachusetts. It is still not established under what authority the state would license the use, storage, distribution, and disposal of NARM (naturally occurring and accelerator radioactive material). This type of radioactive material is not an aspect of the Agreement State Program approved by the NRC.
Response: 105 CMR 120.100 (Part C) also allows the licensing of NARM material. Authority for these regulations can be found in Chapter 111, Sections 5M-P.

Other DPH regulations, referred to on pages 1 and 12 of the DPH rationale and impact report, should be available to the public just like the draft regulations. I can't comment without having these as well. The public deserves to see the whole picture.
Response: Other draft regulations were available upon request.

SPECIFIC PUBLIC COMMENTS -- PART M

Defining "treatment" to include storage for decay blurs the difference between a treatment and a storage/disposal facility.
Response: This was required by Chapter 111H and is intended to differentiate between a treatment facility, a storage facility, and a disposal facility. Storage for decay is a process whereby radioactive material is stored, usually at the user facility, for a period of ten half-lives. At the end of this period the material is considered to be no longer radioactive and therefore is no longer considered LLRW.

The DPH minimization regulations should include specific figures defining background radiation.
Response: Background levels vary from place to place, even within the boundaries of cities and towns, and thus it would be inappropriate to include specific figures within these regulations. However, it is the intention of these regulations to require the potential licensee to establish background levels for the proposed site prior to the beginning of any activities at this site.

Transfer of a facility license should not be allowed unless the prospective new license holder goes through all of the licensing procedures listed in Part M.
Response: Any prospective license holder, whether the original or one to which the license is being transferred, must meet all of the licensing procedures listed in Part M.

There should be detailed, thorough baseline health studies done for every targeted community. This will eliminate any community that already has high levels of background radiation and will also allow comparisons if there is a future health impact from the facility. (+1)
Response: This comment was responded to under the Management Board comment section.

Thirty years from now, you people won't be there to make sure nothing goes wrong. It is questionable whether monitoring can continue for hundreds of years. The budget could be cut in the future, and then monitoring could stop, or the site might even go unregulated. (+2)
Response: Chapter 111H was designed so as to insure that the regulatory process will remain in place and long term monitoring will be conducted.

I think it is very critical that a figure (as to what background is) is given in the regulations. In your definition in part M or M1, you could clearly define what background is and give a figure.
Response: Background levels vary from place to place, even within the boundaries of cities and towns, and thus it would be inappropriate to include specific figures within these regulations. However, it is the intention of these regulations to require the potential licensee to establish background levels for the proposed site prior to the beginning of any activities at this site.

DPH does not have enough citizen partnership involved in the monitoring program. The exact specifics with the monitoring program are not in our regulations. Do we have real-time monitoring for power plants?
Response: This comment appears to be addressing the monitoring programs in place around nuclear power plants and not the environmental programs called for in these regulations.

Since the effects of radiation are cumulative, criteria should be placed in DPH or DEP regulations that specifically discard sites which statistically show populations which are already affected by radiation or are more vulnerable to radiation exposure.
Response: The siting criteria requirements are in the DEP regulations and this comment will be addressed by that agency.

The documentation and record-keeping requirements are burdensome and duplicative of NRC. The regulation should be modified to eliminate all such duplication.
Response: The documentation and record-keeping requirements under the proposed regulations are meant to replace current NRC requirements, once Massachusetts becomes an Agreement State.

Licensing and operational regulations appear to pick up the issue required for safe management of LLRW.
Response: The comment is so noted and no response is necessary.

Statewide site screening and identification must involve health component. A community exceeding the state average for certain illnesses should be automatically excluded.
Response: The siting criteria requirements are in the DEP regulations and this comment will be addressed by that agency.

In the DPH siting criteria, phrases like "acceptable limits " do not establish a specific standard..
Response: This comment is so noted, however, the use of the term "acceptable limits" in the regulations allows the DPH the flexibility to lower the "acceptable limits" without the necessity to repeat the regulatory review process.

I would like the DPH to make a loud and clear call for baseline health studies for every targeted community.
Response: See response to baseline health study comment under the Management Board comment section.

In the DPH criteria they talk a lot about monitoring, but there is nothing specific, and I think this clearly has to be remedied.
Response: Comment has been so noted, and the section on environmental monitoring has been expanded.

On page M-1, statements made in paragraph (d) should specify that the DEP has a role in the determination of what wastes are acceptable for treatment and storage at a facility.
Response: This statement is not needed, since the Board makes this determination.

On page M-1, paragraphs (d) and (e) discuss "facilities." It is not clear what this refers to, the state's repository or the individual licensee's facilities. Also, as stated in paragraph (e), can radium be authorized for disposal in any "facility"?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-4, the definition for "facility" needs to be better defined to clarify the state's disposal repository versus the individual users' facilities.
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-5, the manifest definition is too brief. There is no statement for isotope, and level of activity is missing. The NRC has issued new information on manifesting.
Response: Comment noted.

On page M-5, the definition of hazardous waste is very specific about byproduct material but what about NARM? In addition, the Plan has taken painstaking effort to define hazardous waste but does not include what is defined in 310 CMR as characteristic and listed waste. The Public should see the exact references to state laws governing hazardous waste.
Response: This definition has been stricken.

On page M-7, the definition of stability means structural stability. Does this apply to the facility or to the stabilization of the waste?
Response: This applies to the stability of the facility.

On page M-7, with regard to the surveillance definition, the term "observation" is not very strong for this type of operation. Is this all the type of surveillance this facility will have and is the evidence of intrusion under observation for a normal-activity intruder, or for a saboteur?
Response: Comment noted. This is the type of surveillance specified in these regulations, however, it does not represent the full range of surveillance that may and will be taking place at the facility. The evidence of intrusion applies to both types of activity.

On page M-8, since the definition for a "facility" is not clear, these requirements imply that all licensees may need two licenses from the Commonwealth, one for the possession of radioactive material and the other for the operation of a waste storage and/or disposal facility.
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-8, if, as a licensee, we are considered the operator of a facility, the annual effective dose limits to the general public will be lower than the federal limits and international guidelines. On what scientific basis are these new limits established?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-11, "Section M.21: Licensing Process," it is not clear if these regulations apply to the proposed repository or to each licensed user's facility. If the term "facility" refers to the broad base of licensees, what provisions are made for existing user's facilities?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-20, a statement is made concerning the Low-Level Radioactive Trust Fund. What about financial assurance for decommissioning after closure?
Response: The certification issued by the Board to certify financial surety covers the costs for closure and institutional control. Therefore, financial assurance after closure will be included.

On page M-23, with regard to "Facility Development, how does this apply to the licensed facilities now in place? Is anything retroactive? Are we grandfathered from this? Do all existing users of radioactive material in Massachusetts have to do all the detailed environmental monitoring specified in these regulations?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-24, concerning the monitoring program, if indeed "operator" refers to that of any licensed facility, how can the state regulations mandate the use of the best available monitoring technology for all commercial enterprises in the Commonwealth? Does this mean licensees will be required to purchase and install costly, state-of-the-art monitoring systems?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-24, a statement is made that within 30 days the Department of Public Health has to set up a monitoring program. Again, does this apply to all licensees of the Commonwealth?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-26, it is specified that the "operator" shall cooperate with the Department and reimburse the Department and the community annually for the monitoring costs. This appears to mean each licensee will pay for the state's monitoring costs, even in many cases when monitoring is not required by the federal regulations.
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-27, where are the rules for closing down a facility? The NRC uses a long process of legal methods of enforcement for severe violations of the regulations. How can the State "immediately" shut down a facility legally without the use of "due process" as provided by law.
Response: This is a provision of Chapter 111H, section 40(b), to protect public health and safety.

On page M-31, it appears the Department will require certification of a waste minimization program above and beyond the licensing process. How will this be more cost-effective for the radioactive material licensees now in the state?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-32, the Department shall inspect all shipments of waste and the vehicle shall not leave the facility until inspected by the Department. Does this mean a resident public health inspector will be paid by the operator? How will the Department get all the necessary resources to cover every license in the State? Again, the Plan is not clear as to whether this procedure applies only to a repository or to all licensees in the Commonwealth.
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

On page M-36, why will the state not allow proof of self-insurance for licensees, since it is currently allowed by the federal agencies?
Response: This comment does not apply, since the regulations are for low-level radioactive waste facilities only.

The facility design and performance specifications, including blueprints, should be an integral part of the license, and deviation from the design or specifications should be considered a violation of the terms of the license. This should be spelled out in the Part M regulations.

Response: This is implied in the process.

The "necessary funds" provision of Section M.27 is not strong enough. "Reasonable assurance" is not enough.
Response: This is so noted.

Part M regulations should include the operator certification criteria used in the operator selection regulations, so that the duplicate review by DPH will include a review of the firm's environmental compliance history.
Response: This is already included in Part M.26(b).

Because Section 8 of Chapter 111H gives DPH wide powers to issue orders necessary for the enforcement of the whole law, the Part M regulations should give the Department more authority to cease activity, revoke, suspend, modify, etc., whether the problem involves violations of Part M or of any other applicable environmental, health, or safety regulation.
Response: The enforcement is in Part A (120.010).

Part M regulations should spell out that migration or threat of migration of radionuclides should trigger temporary closing and a public hearing. The facility should not reopen without a detailed response to all public comments.
Response: This comment is so noted. This is implied in Part M.31(o).

In the Part M regulations, compare the language of Section M.21(9) with the language at M.31(p)(1) and M.31(n)(2). A public meeting in every site community and neighboring community should be mandated, regardless of the request or lack of one by the chief executive officer.
Response: This comment is so noted and will be considered in the implementation procedures.

The Part M regulations need definitions for "active access control" and "passive access control." Presumably, passive control means just fencing. If so, we favor active access control for the full institutional control period. Fences, especially 100-year-old fences, are inadequate to keep people out of a site.
Response: These terms have already been stricken from the regulations.

Section M.21 should be amended, requiring that a copy of all submissions to the DPH under the licensing procedure, as well as all correspondence between the applicant and all state agencies, are to be copied to the local community, including the chief operating officer and the local board of health.
Response: All correspondence will be available.

DPH should add the following sentence to Section M.20: "Sites which are undergoing decommissioning and/or remediation under the authority of the NRC, DOE, EPA, or DEP do not require a license under Part M." Alternatively, DPH should exempt sites which are adequately regulated under other programs. At a minimum, DPH should create a procedure under which existing sites subject to other regulatory programs may receive a waiver from the proposed regulation's requirements.
Response: This comment does not apply.

Define "disposal" (p. M-4) as "isolation of radioactive waste from the biosphere inhabited by human beings and their food chains for the entire period during which the waste is radioactive beyond radioactivity levels normally ambient in the Commonwealth," or something similar.
Response: The definition in the regulations comes from the law (Chapter 111H).

Section M.14 should have something like the following sentence added to the end: "The facility shall, however, carry out a program of active maintenance and active access control for the entire period of time the waste inside is radioactive beyond levels normally ambient in the Commonwealth, not to be less than 100 years for Class A waste, 300 years for Class B waste and 500 years for Class C waste."
Response: The term "active access control" is stricken from the regulations, so the need for this clarification no longer exists.

SPECIFIC PUBLIC COMMENTS – PART M1

Pleased to see source reduction is to be the first priority.
Response: The comment is so noted and no response is necessary.

Source reduction/elimination is most important. It should be the Board's principal objective. (+19)
Response: Source and volume reduction are both principal objectives of Chapter 111H.

The Board should build a disposal facility only in return for the industry reducing LLRW under strict standards and deadlines.
Response: The comment is so noted and no response is necessary.

The M1 regulations are a strong part of the whole package.
Response: The comment is so noted and no response is necessary.

I Question the need for waste minimization regulations when minimization activities are universally in place. (+1)

Response: Waste minimization regulations are required by Chapter 111H, and without regulatory requirements there is no assurance that current minimization activities will continue. It is also believed that further waste minimization practices can and should be implemented by waste generators.

Important that minimization regulations don't penalize generators who have already made progress. (+2)
Response: The comment is so noted and no response is necessary.

The minimization regulations are too general/too vague/too weak. (+1)
Response: The comment is so noted and no response is necessary.

The proposed waste minimization regulations provide little guidance for generators, particularly those who generate less than 100 cubic feet per year. For example, proposed M1 regulations [(60(f)] require that waste minimization statements (as well as plans) be evaluated in accordance with Sections M1.50, 60, and 70. However, these sections provide only very broad statements of policy and little in the way of concrete requirements. More guidance regarding plan content and other requirements is necessary.
Response: The specific guidance suggested will be contained in the Guidance Document mentioned above, and is not considered to be appropriate as part of the regulations.

If you leave it up to industry to tell you how far they can go with minimization, they are not really going to tell you.
Response: The comment is so noted and no response is necessary.

If you site a MA disposal facility, that serves as a disincentive to the minimization/elimination of radioactive waste production. The Board's focus on siting rather than minimization legitimizes, encourages the production of LLRW. The DPH regulations could balance that out. (3)
Response: The DPH believes that a proper balance exists under the requirements of Chapter 111H so as to insure that further unnecessary production of LLRW is not encouraged.

To make a sincere effort at waste minimization, DPH should model the M-1 regulations on the TURA regulations done by the DPH's Division of Environmental Health Assessment. If they choose not to, it shows the lack of a sincere effort, thus the Management Board will not be entitled to vote on siting. (+1)
Response: This comment has been addressed under the Management Board comment section.

The DPH minimization regulations should ensure that no radioactive waste is dumped into the solid waste stream.
Response: Chapter 111H specifically forbids the disposal of Low Level Radioactive waste anywhere in the Commonwealth except into a licensed LLRW facility.

Given the successful implementation of volume minimization accomplished by RAM users, the promulgation of detailed regulations in this area will not further improve the existing situation.
Response: See immediately preceding response.

The Board's proposed source and waste volume minimization regulations are unnecessary, frivolous, and wasteful. If necessary, appropriate changes should be made to Chapter 111H to delete any statutory requirements for it.
Response: The comment is so noted and no response is necessary.

Without benefit of regulations, the LLRW generators have led the nation in the application of improved technologies and practices. Before any regulations are adopted, (1) there must be a problem; (2) the state must have the potential to alleviate the problem; (3) the costs of the regulations must be commensurate with the benefits. The minimization program should be dropped, and Chapter 111H amended accordingly. Source and waste volume minimization are not problems; they are legitimate subjects of pride, having been achieved without regulation. No evident suggests that imposing regulations would expedite or accelerate the process to any measurable extent. (+1)
Response: Waste minimization regulations are required by Chapter 111H and without regulatory requirements there is no assurance that current minimization activities will continue. It is also believed that further waste minimization practices can and should be implemented by waste generators.

There must be some reduction and waste minimization.
Response: The comment is so noted and no response is necessary.

Produce as little LLRW as possible. (+1)
Response: The comment is so noted and no response is necessary.

Stop the generation of all LLRW, except medical, until we have a safe place to put it. (+1)
Response: The comment is so noted and no response is necessary.

The ultimate goal should be zero production of LLRW. (+12)
Response: This comment has been addressed under the Management Board comment section.

There should be a cap on the number of LLRW generators allowed in the state, like a town sets a limit on the number of liquor licenses. This will help with planning and projections.
Response: The comment is so noted and no response is necessary.

There should be a cap on the amount of LLRW a generator can produce.
Response: The comment is so noted and no response is necessary.

The DPH minimization regulations should, following the examples of programs at Cornell University and Dartmouth College, require generators to replace long-lived radioactive materials with shorter-lived ones in order to eliminate the production of long-lived waste and avoid the chance of long-lived radionuclides escaping from a disposal facility. (+1)
Response: This comment is so noted, and it is observed that the license application review process in Part M addresses this concern.

The incentive to reduce LLRW would remain, even with an in-state disposal facility, because the cost of disposal would still be high.
Response: The comment is so noted, and no response is necessary.

As a way of reducing radioactive sources, the costs of disposal should triple next year, with assessments based on volume, radioactivity, and duration of the hazard; or, a surcharge should be implemented (+1)
Response: The comment is so noted and no response is necessary.

Provide credits and incentives to LLRW generators who excel in waste reduction and who use new or non-nuclear technologies to minimize generation, penalties to those who do not. (+2)
Response: The comment is so noted and no response is necessary.

If you reduce profits, it forces minimization.
Response: The comment is so noted and no response is necessary.

Regulations should not be limited to radioactive materials, but should include alternative costs of using non-radioactive materials.
Response: The comment is so noted and no response is necessary.

The DPH minimization regulations should require DPH to set specific goals/standards for each generator's minimization and source-reduction effort, with specific "carrots" and "sticks." (+13)
Response: The DPH regulations are designed for the generators, not for the Department, and the suggested specificity will be included in the Guidance Document.

The DPH minimization regulations should require reduction by 5 to 10 percent per year.
Response: The regulations are designed to encouraged maximum reduction in waste generation, and it was felt that by assigning specific percentage goals, this maximum reduction might not take place.

Don't put quotas on minimization; the cost of disposal is enough of an incentive already. (+1)
Response: The comment is so noted and no response is necessary.

The DPH minimization regulations should require generators to hold waste for decay whenever possible.
Response: The minimization regulations are designed to take advantage of the "storage for decay" procedure whenever possible and practicable.

The practice of storing waste for decay can reduce the amount of LLRW requiring disposal in a licensed LLRW disposal facility, and can lower the generator's total costs of managing that waste. While storage for decay is now considered a "given" treatment practice, some LLRW generators may have waste streams suitable for decay in storage, that are instead being shipped for disposal. Including a specific requirement that storage for decay must be utilized, whenever possible, would remind each generator of the importance of this process. Because of the economics of disposal in a licensed LLRW disposal facility, all generators are expected to use storage for decay.
Response: The draft M1 regulations contain a provision [M1.70(b)9] that the minimization plan must include storage for decay procedures, including: (1)identifying radioisotopes and LLRW suitable for decay in storage; (2)developing a written set of procedures for the waste handling and waste processing steps necessary to isolate LLRW in storage for decay; (3)identifying an area where storage for decay can occur; and (4)evaluating the size of the storage area necessary to accommodate all wastes accumulated through the entire decay cycle. Any generator failing to utilize storage for decay would have to address this issue during relicensing.

The concept of recycling is totally missing.
Response: This is not within the purview of these regulations.

Important to reduce, recycle LLRW on site.
Response: The comment is so noted and no response is necessary.

Maximum, aggressive recapture of tritium should be required.
Response: This activity would apply to a very limited number of generators, and would be encouraged when and if appropriate.

There should be a serious, structured education program to bring about a reduced LLRW waste stream. Sometimes it's just a lack of technical information that limits a generator's waste reduction efforts. (+1)
Response: The comment is so noted and no response is necessary.

An industry review committee could be set up to recommend ways to reduce LLRW.

Response: This is an excellent comment, and this process will be considered by DPH in implementing these regulations.

The DPH minimization regulations should be more specific as to enforcement procedures. (+3)
Response: Specific enforcement procedures for all DPH radiation regulations can be found in Part A of the comprehensive regulations.

Establish a minimization program that requires the disposal of all waste while space is available elsewhere; all waste generated in the previous year must be disposed of in order to receive renewal of an operating permit.
Response: This comment is so noted and, while no change in the regulations has been made for this, we will consider this comment in developing our permit renewal procedures.

An aggressive reduction program is needed before proceeding with the siting process; we may find we do not need a disposal facility. (+2)
Response: The comment is so noted and no response is necessary.

We take our responsibilities seriously to manage and reduce our waste and have made a 70-percent reduction in the last 10 years.
Response: The comment is so noted and no response is necessary.

I don't see any real specifics on source reduction in the document. I'm wondering if in future documents or future meetings you could address this a little more specifically.
Response: This specificity will be addressed in the Guidance Document, and has also been addressed in the Management Board comments section.

There's nothing specific in the minimization regulations. I think there should be incentives and specific criteria regarding when they have to reduce, and how much it's going to cost if they don't.
Response: See immediately preceding response.

In the minimization program, encourage the major research hospitals to develop practices to ensure replacement of long-lived materials with short-lived, to hold for decay whenever possible, and to ensure that no radioactive waste is dumped into the solid waste stream.
Response: These comments have been addressed above.

We have had a great deal of success in reducing our LLRW stream at Pilgrim Station in the last decade.
Response: The comment is so noted and no response is necessary.

M1 is not named properly. There is nothing concrete here -- no incentive/penalty provisions.
Response: The comment is so noted and no response is necessary.

The text doesn't seem specific enough on goals for source minimization. With reasonable technologies coming along all the time, I don't think that this can be considered effective until some stated numerical or percentage goals are built in.
Response: The regulations are designed to encouraged maximum reduction in waste generation, and it was felt that by assigning specific percentage goals, this maximum reduction might not take place.

I think another solution would be to provide credits and incentives to the LLRW generators who excel in waste reduction, and who would use new technologies to minimize generation in the amount of waste.
Response: This suggestion will be utilized and encouraged in the Guidance Document.

The MA biotechnology industry does not oppose the proposed requirements of waste minimization.
Response: The comment is so noted and no response is necessary.

No matter what way you go, accept nothing but a zero-error factor in the way you monitor the situation.
Response: The comment is so noted and no response is necessary.

Radioactive waste minimization regulations are inadequate and must provide clear waste reduction goals and enforcement of reduction plans.
Response: The regulations are designed to encouraged maximum reduction in waste generation, and it was felt that by assigning specific percentage goals this maximum reduction might not take place.

The best solution to dealing with LLRW is to produce absolutely as little as possible. While at the present time zero production may not be possible, it should remain as the ideal.
Response: This comment is addressed in the Management Board comment section.

Standards for enforcement of waste minimization are vague...there are no tangible guidelines..
Response: See above responses to similar comments.

Emphasize source reduction as the primary objective.... We need more specific requirements for a source reduction program.
Response: This comment is addressed in the Management Board comment section.

I would strongly put my support behind every effort to reduce the source because I think that has some possibility for the future – waste minimization and enforcement. (+4)
Response: See immediately preceding response.

When you're talking about minimization programs, the cost of disposal is already driving these, and I would urge you not to put any numerical quotas on them because people are already trying very hard to minimize it for their own sake.
Response: The comment is so noted and no response is necessary.

I congratulate you and DPH for the part M1 provisions that would seek further source and volume reduction.
Response: The comment is so noted and no response is necessary.

I think the most important issue here is source reduction, or volume/source minimization. A definite number should be given.
Response: See above responses to similar comments.

There should be legislation to encourage the research and development to implement volume and source reduction.
Response: The comment is so noted and no response is necessary.

Driving force is cost [in waste reduction].... We're doing everything possible to reduce volume. We will never get it to zero.
Response: The comment is so noted and no response is necessary.

On page M1-5: This section specifies that generators must prepare a statement of measures taken to minimize any waste. This statement seems to go beyond the scope of this plan, since it not only refers to LLRW but also to chemical waste.
Response: This section would only apply if the waste was mixed waste.

No Part M1 license should be required for sites currently undergoing decommissioning. The imposition of a license requirement will tend to hinder site remediation without producing any benefit for the Commonwealth. The Board and regulatory agencies should seek to ensure that the Management Plan and regulations do not undermine the public policies encouraging remediation of these sites.
Response: Part M1 does not require a license, but requires an approved minimization statement and plan. The same is required for remediation and decommissioning work if such activity produces waste requiring disposal.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
LLRW FACILITY SITE SELECTION CRITERIA REGULATIONS (310 CMR 41.00)

PART I - GENERAL

Public Comments:

Definitions

1. **The definitions of site, waste management area, and buffer zone should be clarified. The criteria should not apply to the site, but to the facility or waste management area.**
Response: The definitions as written are consistent with the definitions in Chapter 111H and the regulations of the Low-Level Radioactive Waste Management Board (hereinafter Board) and the Department of Public Health. The definitions do distinguish between those three areas. The buffer zone is part of the facility and represents the boundary line between the facility and the rest of the site. The choice of whether a regulatory criterion should apply to the waste management area or the site is to a large extent determined by the express siting criteria set by Chapter 111H at section 14.

2. **The definition of significantly higher than normal risk needs clarification.**
Response: The definition in the regulation corresponds to the Chapter 111H criteria which provide that sites be located away from "...any structure or area in which are regularly found persons, who because of their age or physical characteristics, are likely to be at a significantly higher than normal risk of adverse health affects if exposed to the release of radioactive or associated toxic materials." [Chapter 111H, section 14(13)]. The regulations apply the criteria at Section 41.24(b) to require that when the potential for a site to release radioactivity or other contaminants is assessed the assessment must consider whether it is reasonably likely that certain segments of the population may be more sensitive to exposure to radioactivity or hazardous waste than the general population, and that these sensitive populations may need to be further away from sites so the risk to their health is no greater than the potential risk to the general population. For further discussion of sensitive populations, see the responses to comments in the Demographic section below.

PART II - SITE SUITABILITY CRITERIA

General Public Comments:

1. **Consider the negative impact of siting a facility in parts of the state which rely on tourism.**
Response: Opinion noted. The criteria related to preferring areas not subject to transient (tourist and sportsmen) populations and prohibiting adverse impacts on protected lands will be relevant in evaluating the potential adverse impact of a site on tourism.

2. **Criteria do not contain consideration of whether a community is hosting other facilities which serve statewide rather than local needs.**
Response: There are no criteria in Chapter 111H or federal regulations or guidelines which directly refer to such a criterion in making a site selection. In addition, state law and NRC regulation make it clear that the ability of a site to isolate waste from the public and the environment must be the predominant factor in selecting a superior site. Given the mandate of Chapter 111H, the Department believes that it would be inappropriate to Include the standard suggested by the comment in the regulations. The regulations do, however, authorize the Board to adopt additional preference criteria in selecting among superior sites, and it may consider the equity factor in that context.

3. **Use of conditional criteria is a "back-door" method of granting the Department discretion not permitted by Chapter 111H. The regulations should use only exclusion and preference criteria.**
Response: Neither the mandate nor the intent of Chapter 111H is violated by the conditional consideration criteria. The conditional consideration criteria is not a waiver of the application of the site selection criteria prohibited by Chapter 111H. Sites reviewed under that criteria may be selected if they meet specific conditions which demonstrate use of the site will not result In an adverse impact or cause a release of radiation in excess of the maximum levels established by the Department of Public Health (performance objectives set forth at 105 CMR 120.811). The requirement that a site avoid adverse impacts and meet DPH performance objectives is the standard applied in many of the minimum site selection criteria prescribed by Chapter 111H. The regulations do not permit a site to be selected which cannot demonstrate compliance with these conditions.

The use of only exclusion or preference criteria would not satisfy the Chapter 111H's twin siting objectives to protect the public health and environment and select a superior site based on site-specific characteristics. Conditional consideration criteria serve several legitimate purposes. They permit, but do not require, the Board to screen out conditional sites without attempting to demonstrate that a particular site meets the acceptance conditions. This approach makes the siting process more efficient and more protective without unnecessarily excluding potentially superior sites. Conditional consideration criteria also promote decisions based on detailed site characterization rather than relying solely on the generic standards contained in several of the exclusion criteria. It also permits the consideration of factors such as the type of engineered barrier system chosen by the site community in selecting the final site, improvements which may be made to the site and access roads, and the removal of potential exposure points by exercise of the Board's eminent domain authority. Use of the preference criteria is limited to selecting among acceptable sites, and is not intended to eliminate unacceptable sites.

4. **The draft regulations are biased toward siting in poor, rural communities.**
Response: There is no intent to make a community's population density or economic status determinative factors in site selection. The regulations, for example, do not establish maximum population density as do some other states' regulations. Most of the siting characteristics noted in the comment are directly related to protection of the public health and the environment not socio-economic characteristics. As noted in detail in the response to Comment 4 in the Demographics section below, NRC strongly advises siting in a lower-density area to minimize the scope of potential exposures and inadvertent intrusion. Similarly, the criteria related to ensuring uncongested traffic routes and less residential development near access routes is intended to reduce the scope of potential exposures in case of an inadvertent release of radioactivity. The criterion preferring less upstream development parallels an NRC environmental impact criterion [(10 CFR 61.50(5))] which is designed to reduce the potential for changes in drainage patterns to adversely increase the run-on/run-off of surface water at the site.

   While these criteria do signify a preference for less densely populated areas, they say nothing about the wealth of the community. The criteria that compare candidate site's population density and potential for future development are preference criteria, which are not used to disqualify any location as a suitable site. In addition, concern about residential population density is balanced by a criterion which prefers sites not subject to seasonal influxes of tourists, workers, or sportsmen.

   In response to Chapter 111H's mandate that the Board consider the social and economic characteristics of the site, the Department's public hearing draft contained preference criteria related to socio-economic factors and cost of the site. The final regulations eliminate these preference criteria. The Department believes that it better serves the intent of Chapter 111H for the siting regulations to focus on criteria ensuring protection of public health, safety, and the environment. It is, however, appropriate for the Board to determine whether it wants to use socio-economic or other reasonable factors to select among technically superior sites. Therefore, a provision has been added to the final regulation that authorizes the Board to establish additional preference criteria in a timely manner through an independent process [See section 41.40(5)].

5. **The siting criteria are inadequate. If an elevated level of radiation shows up near a new LLRW facility, it cannot be determined whether it is coming from the new facility or from another facility using radioactive material in the area.**
Response: This concern is directly addressed in section 41.29(1)(b), which excludes siting a facility where past or present activities near the site would interfere with the ability of the environmental monitoring system to detect, measure, and monitor any release of radioactivity from the facility.

6. **The siting criteria are too strict. They appear to be related to shallow land burial which is prohibited. The siting criteria should be related to the design of the facility.**
Response: Although shallow land burial is prohibited by Chapter 111H, the regulations presume that the site itself must play a key function in isolating the waste from the public and the environment, particularly given the extended period of time portions of the waste will remain radioactive. Part III of the regulations provides that the waste isolation capabilities of the containers and the facility should be incorporated in assessing a prospective site's ability to meet DPH performance objectives.

7. **Massachusetts has freezing weather, precipitation, acidic soil, and lots of groundwater and surface water, and therefore is not a good place for a site.**
Response: The regulations contain specific and comprehensive criteria to address each of these concerns. Section 41.20 excludes sites that may cause an adverse groundwater impact, section 41.21 excludes sites that may cause an adverse surface-water impact, and section 41.27 excludes sites that would be adversely affected by the weather. There is no evidence to indicate that acidic soil would have any effect on the performance of a site, but soil conditions will be extensively tested.

Public Comments on Specific Criteria:

A. Water Resource Protection

1. **Exclude sites within Zone III's and Zone II's even if the pump rate at the time of site consideration is not 100,000 gallons per day.**
Response: The determination of the pump rate is not measured on the actual rate being pumped on a particular date but on the approved yield as determined by the Department in the course of the source approval process.

2. **Depth to water table should be a minimum of 10 feet to the bottom of the waste management structure.**
Response: The regulations have been changed to reflect that the distance from the water table is to be measured from the bottom of the waste management structure, but the suggestion that a exclusion distance of 10 feet be established is not accepted. Chapter 111H, at section 14(b)(4), provides that the distance from the water table be set so that groundwater intrusion into the waste will not occur. Consistent with statute, the regulations provide that the acceptable depth be based on such a site-specific analysis. The site selected will have undergone extensive testing, including at least a year of groundwater monitoring to establish seasonal changes in water table height necessary to determine the maximum level. Based on the

specific soil and hydraulic conditions at the site, it will be possible to project with a high degree of accuracy the maximum height the water table might reach, even in extreme conditions.

The regulations do establish a conditional 10-foot setback distance from the water table, which the Department believes is adequately protective and an effective screening measure the Board can apply. The general depth of the water table in Massachusetts is at least 15-20 feet. By comparison, the site assignment regulations for solid waste landfills require only a four-foot separation between the water table and the waste management structure.

3. **The criteria do not adequately protect bedrock wells.**
Response: The definition of "aquifer" has been changed to eliminate reference to saturated permeable material. This is intended to clarify any ambiguity as to whether the term applies to bedrock aquifers – it does. There are several other criteria which provide protection to bedrock well aquifers. Section 41.10 restricts the siting of facilities over fractured bedrock with groundwater pathways. Section 41.20 excludes siting within the zones of contribution of private wells. Zones of contribution can be calculated for bedrock wells. In particular, 41.20(h) is tailored specifically to areas where the saturated zone is below the bedrock. By requiring a minimum 10-foot overburden of low-permeability material, the criteria in essence create a "seal" over the bedrock. Additional protection is provided by the application of the criteria in Sections 41.20(2)(d) and 3(c).

4. **Replacement of small water systems should be for 100-500 years, not 20 years.**
Response: The conditional consideration which allowed for siting in the Zone II of a small water system, if the system was replaced with an alternative system that was capable of serving the region for 20 years, has been eliminated from the final regulations. As a result there is no need to consider the appropriate time period for substitute supplies.

5. **Provide groundwater protection requirements as stringent as in EPA's proposed draft. Classify all groundwater within two miles of the site.**
Response: Chapter 111H has established the performance objectives adopted by DPH as the standard by which the suitability of the site should be measured in relation to protection from radiation exposure (105 CMR 120.811). The EPA regulations have never been released to the public as an official draft, and have been vigorously opposed by the NRC and the DOE. Therefore, it would be inappropriate to accord them significance as a alternative measure of necessary health protection. In addition, recent information from EPA indicates that it intends to revise the criteria, since it no longer classifies groundwater in the manner proposed in the preliminary draft.

B. Geological

1. **Do not use the Richter scale to measure intensity, use original Intensity values.**
Response: All modern acceleration data is related to magnitude on the Richter scale and will be retained as a measurement benchmark. However, the regulation at 41.22(2)(a) is amended to add Modified Mercalli Intensity V as an alternative measurement method.

2. **Epicenters cannot be determined within a three-mile radius.**
Response: After consultation with officials at the Weston Observatory, the criterion will be retained.

3. **The liquefaction performance standard should be a conditional consideration.**
Response: The ability of the site to resist liquefaction is a conditional consideration [(41.23(2)(b)] as well as a preference criterion.

4. **The criteria that disfavor sites with varved clay and lacustrine deposits should be deleted because of their positive hydraulic characteristics.**
Response: Comment noted. The criteria will be retained. It is a preference criteria and can be adjusted to reflect site-specific conditions.

5. **The preference criteria on tectonic complexity and uniformity should be relative rather than absolute.**
Response: Agreed. Text is changed to reflect comment.

C. Demographics

1. **Areas with dense population should be excluded early in the process.**
Response: Although census data exists to allow for early screening of population density, the regulations intentionally do not use that measure as a screen in the first stages of site selection. The population density selected would likely be challenged as a number without a clear technical basis and would tend to create unnecessary conflict at the earliest stage of the selection process.

2. **Maximum population density should be set at the level equal to the density of the areas that surround the major manufacturing sites that generate LLRW.**
Response: The regulations do not set a maximum population density although the NRC guidance makes it clear that sites located in less populated areas are preferred as a means to reduce total potential exposures and isolate the facility from

activities which in the future might compromise its waste isolation integrity. The regulations rely on a performance assessment of the site to demonstrate that it will meet the DPH performance objectives for maximum acceptable exposure to radiation (105 CMR 120.811) Population density will be one of the factors which will be evaluated as part of that assessment. In addition, there is a conditional setback of 1½ miles between the site and any areas zoned exclusively for residences.

3. **Don't locate site near high-risk populations.**
Response: The criteria at 41.24(b) prohibit siting in the vicinity of a sensitive population location where that population would be reasonably likely to be exposed to radiation above the DPH prescribed maximum permitted levels or suffer a risk of adverse effects greater than the general population would likely suffer as a result of such exposure.

4. **Use of demographic criteria for site selection is a questionable practice.**
Response: Consideration of population density and future growth is a criteria mandated by the NRC in its site suitability criteria. 10 CFR 61.50(2) provides that "a disposal site should be selected so that projected population growth and future developments are not likely to affect the ability of the disposal facility to meet the performance objectives." The NRC guidance document (NUREG-0902) recommends that "Disposal sites should be located in an area which has low population density and limited population growth." Chapter 111H mandates that Department regulations "...at a minimum, be compatible with the federal regulatory program..." established under the Atomic Energy Act. The preference for a low-density area is not intended to substitute for providing protection to every potentially affected individual. Rather it serves to reduce the number of potential instances of exposure, both at the commencement of facility operation and also into the future, when expanding populations may move closer to the site boundaries, increasing the risk of greater numbers of people being exposed by proximity or inadvertent intrusion.

5. **The criteria should prefer sites further away from residential areas. A 1½-mile setback from any residence should be in the regulations.**
Response: The regulations, at section 41.24(2)(b) establish a conditional setback of 1½ miles between the waste management area and a residentially zoned area in any community. The distance is not related to the economic protection provisions of the Board's regulations, but to NRC public health guidance (NUREG 0902 at page 6). Setting the same distance as an absolute setback from any house would arbitrarily restrict siting where a performance assessment was able to demonstrate that at a lesser distance no individual would be subjected to a unreasonable risk of exposure to radiation exceeding DPH performance objectives. While the Board can choose to make that demonstration, it is also authorized to screen out or defer evaluation of these conditional locations and concentrate its efforts on sites outside the setback radius. In addition, making the distance from a single residence an exclusion criteria would improperly restrict the Board from exercising its eminent domain authority to remove homes or other places from potential exposure by acquiring the property. The criteria at section 41.24(3) establishes a preference for sites located where population is less dense and population growth is less likely to occur.

6. **Regulations should have minimum setbacks from schools, hospitals, and nursing homes.**
Response: The regulations incorporate a conditional consideration setback of ¼ mile from the edge of the buffer zone to any sensitive population location. Using the edge of the buffer zone rather than the waste management area as the boundary will effectively make the distance between the population and the waste significantly greater than ¼ mile.

Establishing an absolute minimum setback of 1½ miles is not justifiable on the basis of protection of sensitive populations. DPH design objectives are set to yield zero release from the facility. The site selected under the Department's regulations will also have a variety of characteristics that will serve to isolate the waste from migrating off the site. Even if these objectives are not fully realized, the exposure dose limits in the DPH performance objectives are established at levels intended to prevent both the general and sensitive populations from health risks. In order to provide additional protection to sensitive populations, the regulations exclude sites whose proximity to sensitive populations would reasonably result in doses that either exceed DPH performance objectives or, even if lower than DPH exposure limits, would still likely result in a greater risk of adverse effect to the sensitive population than to the general public.

8. **The facility should not be located near residential, commercial, recreational, or institutional land uses. The Commonwealth should secure easements or restrictive covenants to limit future development.**
Response: Section 41.24 of the regulations contains a series of exclusion, conditional consideration, and preference criteria designed to allow a facility to be sited only where it is consistent with existing and future potential land uses in proximity to the site. In particular, a conditional consideration setback of 1½ miles between the site and any area zoned exclusively for residential use is established. The application guidelines require a five-mile survey to be conducted in order to determine potential impacts of the facility to the surrounding area.

The recommendation that the Commonwealth acquire land to prevent impingement on the facility is noted. Chapter 111H authorizes the Commonwealth to acquire land and easements or other property interests necessary to operate and construct a facility and to conduct an environmental monitoring program [Chapter 111H, section 23(g)].

D. Site Size and Facility Compatibility

1. **The regulations should state the minimum site size.**
Response: The Board will determine the minimum site size in accordance with their authority under Chapter 111H.

2. **The preference for lower-cost sites should be eliminated.**
Response: Agreed. It has been deleted from the final regulations.

E. Transportation

1. **The transportation of waste is one of the highest risk factors. Transportation risk should be an exclusion factor to be screened out early in siting process. Do not site near well travelled highways. Prefer sites which would require the least number or residents to be passed from the point of generation.**
Response: There are no criteria in Chapter 111H or within federal standards which exclude sites on the basis of transportation factors. The factors of road quality, accident risk, and potential exposure to persons in the vicinity of the site must be evaluated as part of the site selection process to assure that the health and safety of motorists and residents are adequately protected. It is important to note that radionuclides have been transported throughout the state and on the interstate highway system for decades with no apparent adverse health or safety effects.

While the regulations require the transportation risks to residents and public places along access routes in the siting community to be comprehensively evaluated to prevent a public health threat, criteria based on the cumulative number of residences the waste might pass does not appear relevant to siting a centralized management facility. The comment implies that the waste be tracked from the point of generation to the disposal site. But that same waste is now being transported from the generator on the many of same roads and highways as it travels out of state. The criteria in the regulations focuses on changes in the transportation pattern that may occur if those various shipments come off an interstate highway to a disposal site in a single community.

2. **The regulations should specify that the site be located closest to the highest volume of radioactive waste generation. The facility should be located in the central part of the state to minimize transportation costs and distances. The waste should be disposed of in the town where it is being produced. The facility should be located near a concentration of biotechnology industries that use radioactive materials.**
Response: The regulations do not adopt these alternative proposals for several reasons. First, the place and volume of generation of low-level radioactive waste is subject to variations over time, as a result of a number of factors including decommissioning schedules of plants using radioactive materials, changes in current users practices, and new users entering the market. Siting against a moving target is not feasible. More importantly, while radioactive waste material has been transported throughout the state for decades there is no indication that its travel on state and local roads presents a public health threat if properly managed. If an out-of-state disposal solution is available, such transportation will continue in the future. One reason for the absence of a significant threat to date is the strict state and federal rules governing transportation and containerization of LLRW. The Board's Management Plan proposes additional transportation controls.

F. Land Use

1. **The criterion at section 41.29(1)(a) is vague. Establish a ½-mile exclusion area between the site and places where other waste has been previously disposed.**
Response: The criteria at section 41.29(1)(a) tracks the language of Chapter 111H, section 14(b)(8), and NRC siting regulations and is intended to promote decisions based on site-specific data rather than arbitrary setbacks. Section 41.29(1)(b) explicitly provides for exclusion of any site where it is likely that nearby past or present activities would affect the environmental monitoring program. An exclusion setback to ensure monitoring capability may be particularly inappropriate, as the impact of the old waste site on the environmental monitoring of the LLRW facility will primarily depend on the relationship of their respective hydrogeologic systems. There may be, for example, a groundwater divide which isolates the sites or the facility might be upgradient of the old site and be completely unaffected by the contamination moving away from the old site.

2. **The facility should be located in an already polluted area.**
Response: The presence of existing pollution may interfere with the ability of the environmental monitoring system to detect and monitor the release of radioactivity from the facility. Siting a facility which poses a risk to disrupt the monitoring system is prohibited by Chapter 111H and the regulations.

4. **Criteria should exclude any site within the Emergency Protection Zone of a facility which emits radiation, to prevent potential additional radioactive exposure to a community.**
Response: The maximum exposure limits set forth in the DPH performance objectives (105 CMR 120.811) are the standards by which performance of the site is measured. This approach is consistent with the criteria established in Chapter 111H, section 14. It would be arbitrary to set a 10-mile exclusion radius in the absence of site-specific data indicating the presence of a significant health threat from either the LLRW facility alone or in combination with an existing user of radioactive materials. A performance assessment will be conducted to determine the potential exposure the population in the vicinity of the site may be exposed to. That assessment is likely to consider the existing background levels of exposure to potentially affected residents.

G. Protected Lands

1. **The inclusion of the reference to the conditional consideration criteria in the provision protecting against adverse impacts to federally protected areas is inappropriate.**
Response: Agreed. The reference is deleted.

2. **The exclusion criteria for protected lands should include private and non-profit conservation easements.**
Response: Applying an exclusion criteria to conservation restrictions is inconsistent with the Department's interpretation of Chapter 111H. The Act, at section 14(b)(12), prescribes site restrictions only for certain lands protected under federal laws. Excluding sites subject to conservation restrictions would also appear to be inconsistent with section 20(f) of Chapter 111H, which prohibits a person owning property to take any action with respect to the property which has the effect of interfering with or rendering more difficult the acquisition of the property by the Board once the draft candidate sites are identified.

   While it seems apparent that the Legislature intentionally omitted any reference to lands protected under state law, it also directed the Department to give primary consideration to protection of the public health and the environment in developing the siting criteria. This led the Department to interpret Chapter 111H to allow enforcement of land-use restrictions consistent with existing state laws, but not to expand the restrictions to exclude siting a facility if the Board were able to secure approval under the terms and conditions of the conservation statutes. Appendix A includes the statute (M.G.L. Chapter 184, sections 31-32) which provides for private and not-for-profit conservation restrictions. Lands would be protected consistent with the scope of protection afforded under those laws and court cases interpreting their application to the exercise of eminent domain authority.

3. **Habitat of endangered species listed by federal and state government should be excluded from siting. The text of the provisions should be clarified, as it appears to allow siting which causes an adverse impact if the circumstances are "compelling."**
Response: A facility will be restricted from locating in a endangered species area consistent with the provisions of the statutes governing protection of such areas. See the response to comment No. 2 above for a discussion of the rationale. The text has been clarified by removing the reference to conditional consideration. In addition, the general language which allowed for exceptions in the event of compelling circumstances has been deleted.

H. Socio-economic Impact

1. **Make siting a facility an economic boon. Change terminology to prefer sites which have a positive economic impact on the community.**
Response: In response to Chapter 111H's mandate that the Board consider the social and economic characteristics of the site, the Department's public hearing draft contained preference criteria related to socio-economic factors and cost of the site. The final regulations eliminate these preference criteria. The Department believes that it better serves the intent of Chapter 111H for the siting regulations to focus on criteria ensuring protection of public health, safety, and the environment. It is, however, appropriate for the Board to determine whether it wants to use socio-economic or other reasonable factors to select among technically superior sites. Therefore, a provision has been added to the final regulation that authorizes the Board to establish additional preference criteria in a timely manner through an independent process [See section 41.40(5)].

PART III - APPLICATION GUIDELINES AND PROCEDURES

Public Comments:

1. **The exclusion criteria at sections 41.24, 41.25, and 41.29 are not sufficiently defined.**
Response: The demographic criteria at section 41.24 reflect the approach of Chapter 111H to measure the suitability of the site in relation to its ability to meet DPH performance objectives rather than establishing per se unacceptable locations. While relying on a performance assessment of the site makes it more difficult to screen out some areas early in the process, it does allow for later decisions to made based on site-specific data and dose-exposure analysis. The phrase "in the vicinity of the site" is added to the criterion at section 41.24(1)(a) to clarify its meaning. The criteria related to sensitive populations locations [41.24(1)(b)] is also structured in accordance with the section 14 of Chapter 111H, prescribing minimum siting criteria. The determination of the minimum site size (41.25) will be made by the Board in its regulations. The criterion related to incompatible nearby activities [41.29(1)(a)] is included in accordance with the provisions of Chapter 111H at section 14. Although the exclusion criterion regarding sites which might interfere with monitoring [41.20(1)(b)] requires a judgment to be made on the potential effect of past activities at or near the site, placing the criteria in the conditional consideration criteria results in a site rejection if it is determined that the activities pose a reasonable likelihood that monitoring would be significantly impaired. The draft is amended, however, to change the terms "could" and "may" to "are reasonably likely to..." for clarity and consistency.

2. **Do not screen for modeling capability in statewide screening.**
Response: The text gives the Board discretion to apply professional judgment based on the availability and quality of data presented at each stage. It is not mandatory to conduct it at the site screening stage.

3. **Recommend providing guidance on population density.**
Response: Guidance on population density may be considered at an early stage in accordance with NRC or other federal studies at the Board's discretion. However, as noted earlier, exclusion of certain areas based on population density in the first stages of the siting process may be viewed as arbitrary and counterproductive to an equitable process.

4. **The guidance requires too much site investigation at an early stage.**
Response: The text explicitly allows the Board to exercise professional judgment in determining the level of site scrutiny to use at a preliminary stage. Since hydraulic criteria are critical to a site's suitability it may be necessary to install wells to determine water table depth, groundwater flow, and conductivity. The Board is expressly allowed to advance the analysis on any volunteer sites [41.42(6)].

5. **Term "site" should be changed to "facility" or "waste management area" in many instances.**
Response: The terms used in the guidance generally conforms to the delineations used in the siting criteria. At earlier stages of the site-selection process the boundary of the waste management area, buffer zone, and facility may not be known.

6. **Clarify the reference to travel time in Section 41.20(3)(d).**
Response: Relative travel time is a preference criteria, not an exclusion criteria. The purpose is to choose sites with less potential to allow migration of radiation above background beyond the boundaries of the waste management area. The 100-feet-in-less-than-100-years standard parallels EPA criteria for certain hazardous waste disposal facilities.

7. **The exclusion delineation for surface water discharges within the site is too broad (41.21).**
Response: Agreed. The text is modified to exclude surface water discharges within the waste management area.

8. **Clarify delineation of significant surface waters.**
Response: Agreed. The text is changed to require delineation of waters, not delineation of sites.

9. **Weather modeling is too comprehensive at this stage.**
Response: The level of monitoring at any preliminary stage is within the Board's professional judgment. The text indicates that historical records should be examined and on-site data collection may take place.

10. **Delineation of distance from airports should be from the waste management area, not the site, and should consider the size of aircraft and flight frequency.**
Response: While it is likely that the greatest risk would be a collision within the waste management area, there are activities which may occur in the buffer zone or other parts of the site which may be adversely impacted by air traffic. The text is changed to incorporate a reference to the waste management area and the magnitude of the impact of the air traffic.

11. **If the Department reviews the data, there is insufficient public participation.**
Response: The Department does not review the data in the first instance. The Board reviews the data and makes the site selection. Chapter 111H provides for extensive public comment and local participation and decision-making in the site-selection process. Please consult the Board's Management Plan, which describes in detail the public participation process. If the Board selects a site and its decision is appealed, the Department will conduct an adjudicatory hearing to review the Board's actions and determine if it complied with the regulations.

12. **United States Geological Survey (USGS) data should not be the data source for seismic hazard.**
Response: After consultation with geologists at the Weston Observatory the reliance on USGS will be maintained. Section 41.61(18) now requires supplementing USGS maps with other reliable data sources.

13. **Do not use bedrock maps to delineate acceleration. Siting on bedrock is prohibited.**
Response: Bedrock acceleration maps are the accepted data standard which is now available. Siting is not prohibited on bedrock except in those instances where bedrock fractures present significant pathways or complex hydrogeologic circumstances.

14. **The regulations should establish a maximum surface acceleration value based on engineering concerns.**
Response: The regulations do not establish a surface acceleration value because mapped data is based on lithified earth material movement. A conditional consideration criterion requires a demonstration that the waste isolation components designed for suitable facilities are capable of resisting the maximum horizonal acceleration in lithified earth material. In addition, several of the preference criteria are directly related to avoiding sites with significant potential for liquefaction. The guidelines provide for a complete site-specific investigation of liquefaction and other unstable surface soil elements 41.61 (15). Establishing a maximum fixed surface acceleration value without relation to the design of the facility could render the fixed value irrelevant. The application guidance provision [(41.61(18) and (20)] incorporates the state Building Code standards and national standards related to structural stability and seismic activity. In addition, the guidelines have been amended to recommend consideration of local soil conditions in evaluating the impact of bedrock acceleration factors.

15. **The groundwater investigations need to have specific reference to understanding bedrock fractures, and geologic factors need to be stated more precisely.**
Response: Opinion noted. The guidelines have explicit directions related to investigations of bedrock systems [41.45(2), 41.61 (2)(6)]. In addition, the methodology for comprehensive hydraulic and geologic investigations is detailed in the NRC and DOE

guidance documents, which are incorporated by reference as sources which the Board should rely on in conducting site characterizations.

16. **Eliminate the preference criteria concerning water, tectonics, and geology.**
Response: Opinion noted. The preference criteria may be of great value if the Board determines it is necessary or helpful in selecting the best site among suitable candidate sites.

17. **Eliminate the possible sites step in the site selection process.**
Response: This step is required under Chapter 111H.

18. **Do not rely on Geographic Information System. Draw maps by hand.**
Response: The Department's experience with GIS is extremely positive. Besides being more accurate than hand-drawn maps, it provides an effective means to graphically represent and integrate tabular data and compare sites. The guidelines do allow for equivalent alternative mapping technologies.

19. **The list of documents to be reviewed is inadequate.**
Response: The list of documents is not intended to be comprehensive. As stated in the text, e.g., at 41.60 (2), in addition to the sources listed, "additional published and unpublished data and maps and additional field data" should be consulted in developing the report required at each stage. As the field of sites narrows, more site-specific data will be obtained and analyzed. However, additional sources are referenced to supplement the USGS reference for seismic impact zones at 41.61(18), including reports generated relative to site investigations for power plants and radioactive storage and disposal facilities.

20. **The data acquisition process should require that all documents be released to the public immediately, names of preparers be listed, and sites excluded at any time evidence justifying exclusion is found.**
Response: It is anticipated there will be extensive public participation in the data acquisition and review process under the procedures established by Chapter 111H and as evidenced by the practice of the Board to date. In particular there will be a group in every candidate community which will negotiate a plan with the Board for detailed characterization of the site, and each group will be given access to all raw data. In addition, the regulation's requirements for quality assurance specifically state that all persons working on data collection and analysis be identified and all information submitted be able to be fully audited (41.63). The regulations further authorize the Board to reject a site if at any time during the characterization process it appears that the site will not meet the site criteria [(41.42(6)]. There is no basis to assume that the Board will pursue siting of an unacceptable site.

21. **The authority for the exercise of the conditional consideration is too broad.**
Response: Agreed. The final regulation has been narrowed, consistent with the comment. However, a suggestion to add language which refers generally to protection against adverse health effects is not adopted. The Department believes that reference to DPH performance objectives provides comprehensive protection of public health and safety. Protection of the environment is directly addressed in other sections.

22. **Develop and publish a ranking system for preference criteria. The development of the ranking system for preference criteria should be subject to public hearings and should be completed before the siting process commences.**
Response: Since the Board may choose not to use preference criteria, or may supplement the preference criteria at a later stage in the site selection process, it would not be appropriate for the Department to develop a definitive weighted point system in the regulations. In addition, the regulations are intended to ensure that the site selected is a superior site from the perspective of protecting the public health, safety, and the environment, but is not intended to provide all the criteria which may be considered to select among superior sites.

    The final regulations have been revised to require that if the Board chooses to use a ranking system for preference criteria, it must adopt it before the release of the draft candidate site identification report, issued pursuant to Chapter 111H, section 20(c), and in accordance with the public participation requirements of Chapter 111H. The Board may still choose to use preference criteria without relying on a ranking system. The suggestion that the ranking occur before the site investigation begins is not accepted. Preference criteria should only become significant in the later phases of the site selection process, after there has been a substantial narrowing of sites through application of the exclusion and conditional consideration criteria. Allowing the Board time to develop a ranking system will allow the preliminary screening process to proceed without prejudice, since the Board is authorized to collect data relative to preference criteria during any stage of the proceedings.

23. **The regulations do not impose strict enough consequences for the Board's non-compliance with the Application Guidelines and Procedures section.**
Response: Agreed. The draft regulations inadvertently permitted the exercise of discretion that would have been inconsistent with the intent of Chapter 111H and portions of the regulations. The final regulations have been amended to require the Board to comply with provisions that describe how the exclusion, conditional consideration, and performance criteria are to be applied and the general requirements regarding data collection and quality assurance (Sections 41.40-43). The regulations still permit limited discretion regarding the data collection and analysis procedures conducted in the various stages of site selection. Discretion is necessary since it is impossible to delineate in detail all the activities required to comprehensively accomplish those complex tasks, and also to allow for the detailed site characterization plans developed in concert with the site communities to be negotiated with sufficient flexibility to accommodate factors and concerns not apparent on the effective date of the regulations.

24. **Departure from federal guidance on site characterization methodology should require a finding by the Board that the departure will assure protection of public, health, safety, and the environment.**
Response: The imposition of the burden of making such a finding in every instance of variation is not required under Chapter 111H and would not be feasible to implement. Chapter 111H only requires that the siting criteria be "compatible with" the NRC program. The federal guidance documents referred to in the regulations cover in varying degrees of detail matters such as data collection protocols, quality assurance procedures, and alternative analytical approaches. In many instances it would be impossible to justify a finding that a variation from a particular method would have a positive or adverse affect on the overall impact of the facility. The requirement to make such a finding would also constrain the Board from using the most up-to-date data collection and analytical techniques not yet incorporated into federal guidance, and from responding to a community's input on the development and execution of the detailed site characterization process.

25. **Independent technical review of site characterization should be done by consultants hired by the towns and paid for by the Board.**
Response: Chapter 111H at section 21(c)(4) provides that a community supervisory committee be established for the purpose, in part, of receiving technical assistance and planning funds. At section 23(a), the statute also provides that the community receive copies of all raw data, draft reports, and memoranda pertaining to the site characterization and have an opportunity to review and comment on all work performed.

26. **The decision-making process should be fully documented and deposited in local libraries.**
Response: Chapter 111H and the regulations require procedures for full documentation of all data collection and site characterization procedures. Chapter 111H further provides for the creation, in every candidate site community, of a community supervisory committee which will participate in the site characterization process. This committee will have major responsibility for communications within the community.

27. **The Board should not consider a volunteered site without community consensus.**
Response: It would not be appropriate for the regulations to attempt to constrain the authority of a chief executive officer to request the Board to consider land within the community's jurisdiction. A municipality may, if it so chooses, place preconditions on the action of its officials through its by-laws.

28. **The plan for detailed site characterization, especially in regard to groundwater and zones of contribution for private wells, should be codified in the regulations.**
Response: The regulations in Part III contain extensive discussion of the data collection and analysis which must be performed to fully characterize the groundwater regime at the site. In addition, the regulations incorporate references to Department regulations and guidance as well as NRC guidance documents which provide detailed requirements on these topics. Finally, Chapter 111H authorizes the site communities to work with the Board to develop a detailed characterization plan for each specific site.

29. **The siting process has too many steps. Chapter 111H should be streamlined.**
Response: The site-selection process is detailed in Chapter 111H. Any changes to the process must be accomplished by legislation.

Commenters
(Grouped by Hometown)

Those Who Commented in Person, by Mail, or by Telephone

Agawam	Corwin, Brian
Allston	Lockwood, Dan
Amesbury	Morrissey, Neil
Amherst	Anderson-Frederic, Betty
Amherst	Behan, Michael
Amherst	Bouquillon, Karen A.
Amherst	Bryan, Herb
Amherst	DeFrancesco, Meredith
Amherst	Dimetris, Brian
Amherst	Dimetris, Mary Ann
Amherst	Elliot, William
Amherst	Flynn-Jambeck, Katie
Amherst	Foster, John H.
Amherst	Kittagawa, Jeff
Amherst	Mitchell, Tom
Amherst	Neilson, Tom
Amherst	Ryan, Dick
Amherst	Smith, David
Amherst	Snelling, Jonathan
Amherst	Tocci, Jim
Amherst	Tucker, Barry
Amherst	Winder, Alvin
Amherst	Wingsted, Mark
Amherst	Ziomek, Stan
Ashburnham	Primiano, Dana
Ashfield	Rice, Sally
Athol	Crossen, Peter
Athol	Gray, Barbara
Athol	Young, David
Attleboro	Adler, Charles
Attleboro	Greo, Stephen
Attleboro	Leem, Marie
Attleboro	Numeroski, Marc
Attleboro	Robbins, Judith
Attleboro	Sullivam, John
Attleboro	Veale, Jr., Francis J.
Belchertown	Loftus, Norman
Belchertown	Schneider, Ginny
Beverly	Gleason, Dennis
Beverly	Grabko, Mike
Boston	Assoc. Ind. of MA
Boston	Baram, Michael
Boston	Blackwell, John
Boston	Boulette, E. Thomas
Boston	Brehio, Steven
Boston	Bumett, Gail
Boston	Butler, Brian
Boston	Cahill, Mark
Boston	Carlson, Craig
Boston	Evdokimoff, Victor
Boston	Fraser, Genevieve
Boston	Hodgkins, Christopher J.
Boston	Jacques, Cheryl A.
Boston	McQuilken, Angus
Boston	Mogck, Derek
Boston	Murray, Therese
Boston	O'Brien, Terry
Boston	Pacheco, Marc R.
Boston	Person, Eric
Boston	Richardson, Sam
Boston	Ruddock, Robert
Boston	Schultz, Steven
Boston	Shea, Suzanne
Boston	Stelluto, Janice
Boston	Sussler, Phil
Boston	Wetmore, Robert D.
Boston	Wilson, Matthew
Broadbrook, CT	Albrizio, Mickey
Brockton	Butler, Bob
Cambridge	Hardy, Johanna
Cambridge	McMahon, Ethan
Charlemont	Harris, Kate
Charlemont	Katz, Fred
Chelmsford	Abbott, Eleanor
Chelmsford	Brough, Kathy
Chicopee	Brouillard, Barry
Clarksburg	Shoots, Paula
Clinton	Barry, Martin
Concord	Alexander, Jane
Concord	Barosh, Patrick
Concord	Bracco, Donato & Elsie
Concord	Fisher, Abe
Concord	Humphreys, Colleen
Concord	Kelly, Jack
Concord	Menke, Aaron
Concord	Miller, Mr.
Concord	Quackenbush, A. T.
Concord	Rose, Mr.
Concord	Scotnicki, Judy
Dalton	Garcia, Kate
Dorchester	McHale, Meghan
Duxbury	Fleming, Jane
Duxbury	Hall, Judy
Duxbury	Hoover, Joan
Duxbury	Lampert, Mary Elizabeth
Duxbury	Rowley, Ruth
Duxbury	Sisto, Jane
East Douglas	Bachard, Linda M.
East Douglas	Richardson, Jane
East Longmeadow	Gaudet, Todd
Ellington, CT	Blanchette, Gary
Ellington, CT	Wysocki, Edward B.
Fitchburg	Perenzin, Cecilia
Gardner	Donovan, Steven
Gr. Barrington	Condon, Ann
Gr. Barrington	King, Suzanne
Gr. Barrington	Purcell, Carol
Gr. Barrington	Tillinghast, Eleanor
Greenfield	Bernier, Carla
Greenfield	Gozeski, Theresa
Greenfield	Mustavorwik, Ed
Greenfield	Ogden, Don
Greenfield	Rottenberg, Robert B.
Greenfield	Sedgwick, Charles
Greenfield	Stein, Katherine
Greenfield	Streeter, Sandra

Greenfield	Unterkofler, Lisa
Greenfield	Wilson, Tom
Hadley	Walsh, Kristen
Harvard	Abrams, Steven
Harvard	Ball, Audrey
Harvard	Basham, Linda
Harvard	Caruthers, Josephine
Harvard	Chandler, Mildred
Harvard	Chitzy, Jane
Harvard	Dakin, Lori B.
Harvard	Folk, Glen
Harvard	Groeninger, Pat
Harvard	Hare, James L.
Harvard	Kelley, Mark E.
Harvard	May, Elizabeth
Harvard	McCarthy, Sharon M.
Harvard	Miller, Ruth
Harvard	Payton, Patricia
Harvard	Shutt, John
Harvard	Shutt, Phil
Harvard	Sturbell, Pam
Harvard	White, Bill
Haverhill	Bennett, Spencer
Haverhill	Grinnel, Debbie
Haverhill	Wheeler, Lee
Holyoke	Bowdan, Newton
Hopkinton	Laviolette, Donna
Hopkinton	Vickers, Jean
Housatonic	Lovejoy, Ellie
Indian Orchard	Falkowski, Stacia
Indian Orchard	Soltys, Elsie
Jamaica Plain	Blumenstock, Susan
Jamaica Plain	Carr, William G.
Jamaica Plain	Mahoney, Nancy
Jamaica Plain	Mitchell, Mr.
Jamaica Plain	Myers, Lenore
Jamaica Plain	Pydlun, Darcy
Kingston	Buhl, Richard
Kingston	Buhl, Rosanne
Kingston	Cingolani, Lilias
Lee	Day, David
Lee	Gray, Tim
Leeds	Hill, Jr., Vemon
Lenox	Stokes, Tom
Leominster	Altobelli, Lori
Leverett	Bo, Steven
Lincoln	Chong, Lynn
Longmeadow	Becker, Elaine
Longmeadow	Lieb, Mike
Longmeadow	Watnick, Murray
Malden	Frazier, Bob
Medford	Vandervoom, Pat
Monterey	O'Haver, Jenny
Montgomery	King, Denise
Mt. Washington	Austin, Lewis
Mt. Washington	Bulkeley, Morgan
N. Adams	Corriddi, Gail
N. Adams	Harrison, John
N. Adams	Nathan, Carol
N. Adams	Nelson, Priscilla
N. Adams	Parsons, Diane
N. Adams	Plott, Ron
N. Adams	Silliman, Max
N. Adams	Taskin, Harold
N. Attleboro	Lema, Luis
N. Egremont	Brenner, Diane
N. Egremont	Lowell, Julie
New Bedford	Cook, Stephen
New Marlboro	Goodkind, Joan
New Salem	Dostis, Joshua J.
Newbury	Johnson, Carolyn
Newburyport	Hildt, Beth
Newton	Svirsky, Michael
Newton	Woolley, Gilbert
Northampton	Blatchley, Alice
Northampton	Chiara, Gregory
Northampton	Cones, Betty
Northampton	Crowe, Frances
Northampton	Goldberg, Maria
Northampton	Houghton, Donald M.
Northampton	O'Connor, Vince
Northampton	Saviano, Carl
Orange	Magee, Michael
Orange	Patnode, Laura
Orange	Patnode, Marjorie
Orange	Pike, Constance
Orange	Reed, Ann
Otis	Basis, Thea
Otis	Peyton, Robert E.
Palmer	Duffy, Donald
Palmer	Kelly, Dennis
Palmer	Landers III, Patrick F. Palmer
Palmer	MacDougall, Mary
Palmer	Powers, Cynthia
Palmer	Regan, Doc
Palmer	Rotary Club Repr.,
Palmer	Soree, John
Palmer	St. Armand, Jim
Phillipston	Newell, Phillip
Pittsfield	Arlos, Peter
Pittsfield	Dillard, Jean
Pittsfield	Feltmate, Kelley
Pittsfield	Hine, Nelson F.
Pittsfield	Kerwood, Matthew
Pittsfield	O'Toole, Kelley
Pittsfield	O'Toole, Ed
Pittsfield	Silverstein, Alan
Pittsfield	Thompson, Ed
Pittsfield	Wislocki, George
Plymouth	Bree, Ms.
Plymouth	Parker, George W.
Richmond	Steele, Diane
Rockport	Enfield, Elizabeth
Rockville, CT	Gunn, Louise
Rowe	Thayer, Jay
Rowe	Van Itallie, Jean-Claude
Roxbury	Hadd, Bilal Abdul
S. Lancaster	Christoph, Eugene
Sheffield	Brumalmich, Ron
Sheffield	Haworth, Amy
Sheffield	Law, Robert
Sheffield	Law, Jennifer
Sheffield	Leigh, Suzanna
Sheffield	Perilli, Richard
Sheffield	Perilli, Jenny
Sheffield	Perilli, Robin
Sheffield	Shimmin, Beverly
Sheffield	Spillane, Sally
Sheffield	Steindler, David
Shelburne	Crawford, Sonny
Shelbume Falls	MacLeod, Dale
Shirley	Field, Kate
Shrewsbury	Maroud, Elizabeth
South Deerfield	Boosahda, Laurie
South Deerfield	Miller, Sunny
Southwick	Beneitones, The

Springfield	Barrow, Dave
Springfield	Camerota, Nick
Springfield	Hunter, Annette
Springfield	Omartian, Sara
Springfield	Rannenberg, Ellen
Springfield	Roberts, Donna
Sunderland	Keith, David B.
Taunton	Graban, William
Taunton	Martyniah, John
Taunton	McDonald, Ed
Taunton	McDonald, Kay
Taunton	Simas, Ann
Taunton	Smith, Charles
Taunton	Sullivan, Martin J.
Taunton	Wasnge, Pete
Taunton	Zrebiec, Audrey L.
W. Newton	Whiting, Richard C.
W. Springfield	Curtis, Christopher
W. Springfield	LaBarbera, Peter
W. Springfield	Scherer, Suzanne
W. Stockbridge	Luet, Vincent
Walpole	Brady, James M.
Ware	Haley, Annette
Ware	Hancock, Elizabeth
Warwick	Hawes, Ed
Warwick	Hootstein, Michael
Washington	Bd. of Selectmen
Washington	Sprague, Ethan
Watertown	Entine, Gerald
Watertown	Ric, Marc
Webster	Brosnihan, Mary Ellen
Wendell	McBride, Mary
Wendell	McIver, Dorothy
Wendell	Thompson-Smith, Charles
West Roxbury	Dowd, Darlene
Westfield	Warehol, Henry
Westminster	Brownell, Donna
Westminster	Jarvenpar, David
Westminster	Marrian, Anne
Westminster	Skinner, Ann
Westminster	Wyson, Bonnie
Williamsburg	Desmers, Rick
Williamsburg	Levrat, Raymond
Williamsburg	Weiss, Eric
Williamstown	Patterson, Frank
Woburn	Elkind, Paul
Worcester	Curley, Thomas
Worcester	Fournier, Rich
Worcester	Gotimer, Susan
Worcester	Iacone, Angela
Worcester	O'Neil, Stephen F.
Worcester	Toomey, Charles
Worthington	Bd. of Selectmen
Worthington	Livingston, Joan
Worthington	Pedersen, Amy
Worthington	Sharron, Julie
Yarmouth Port	Lillie, David

Signers of a Petition Submitted June 15, 1993,
By the Massachusetts Alliance to Limit and Eliminate Radioactive Trash (MASS. A.L.E.R.T.)

Adams	Phinney, Arthur
Agawam	Stein, Harold M.
Allston	Basis, Amy K.
Amherst	Abramms, Bob
Amherst	Alder, Vernon A.
Amherst	Aubrey, Mary P.
Amherst	Banacroft, Deborah
Amherst	Brownstein, Joanna
Amherst	Cirfene, John
Amherst	Finger, Gail
Amherst	Fish, Melissa
Amherst	Fleming, Claire
Amherst	Friedman, Seymour
Amherst	Gibavic, George
Amherst	Gibavic, Annette
Amherst	Godsey, John
Amherst	Godsey, Matt
Amherst	Goldberg, Siri
Amherst	Goodwin-Brown, Ross
Amherst	Goodwin-Brown, Alice
Amherst	Janero, Charles
Amherst	Johnson, Kenneth A.
Amherst	Johnson, Linda S.
Amherst	Kakis, James
Amherst	Kent, Iris
Amherst	Kuhn, Jean E.
Amherst	Maldonado, Lourdes
Amherst	Maldonado, Stacie
Amherst	Mazur, Michael
Amherst	Moshiri, A.
Amherst	Pease, Susan E.
Amherst	Peters, Diana
Amherst	Piedul, John M.
Amherst	Rease, Susan E.
Amherst	Reiff, Debra
Amherst	Reiwet, Maria I.
Amherst	Satell, Steve
Amherst	Smith, Cheryl D.
Amherst	Staub, A.
Amherst	Tiberio, Anne F.
Amherst	Tillona, Zina
Amherst	Timmons, Alan
Amherst	Warren, N. T.
Amherst	West, Peter W.
Amherst	Whelan, Michelle
Amherst	Witkus, Gloria
Amherst	Zwelr, M.
Andover	Tucker, Jason
Andover	Tucker, Jennifer
Ashfield	Kipen, Ethel
Ashfield	Sherman, Matt
Ashley Falls	Kent, Jude
Athol	Mallet, Robert
Auburn	Gilbert, Elizabeth A.
Belchertown	Bouley, Linda
Belchertown	Collins, Jeanne
Belchertown	Gates, Kathryn
Belchertown	Gey, Joyce
Belchertown	Kilroy, Steve
Belchertown	Lan, Dori
Belchertown	Pogodinsta, Shirley
Belchertown	Scott, Clifford
Belchertown	Skutek, Karen
Belchertown	Tonts, Brian
Belchertown	Wexford, Elizabeth
Belchertown	Williams, M. A.
Belchertown	Zinter, Erica
Bernardston	Streeter, Sandra
Bonds, ME	Joyce, Beverly A.
Bondsville	Daigle, LuAnn
Bondsville	Jacobs, Christina
Bondsville	Knight, Laurie
Bondsville	Lamery, Judith L.
Boston	Schlichtmann, Jan
Brattelboro, VT	Pratt, William
Brattleboro, VT	Pratt, Sandra
Brimfield	Luszcz, Charles
Brimfield	Luszcz, Statia
Brooklyn, NY	Arroyo, Michele
Buckland	Gleason, Susan P.
Buckland	McCusker, Michael T.
Charlemont	Harris, Kate
Charlemont	Katz, Frederick
Charlemont	Soriecke, Karen
Charlemont	Wakefield, Gael
Charlemont	Weston, Catherine
Chesterfield	Blanchard, Carol
Chesterfield	Sloane, Jodie
Chicopee	Pollender, Keri
Chicopee	Szczebak, Barbara
Conway	Elwell, Chrisstian
Conway	Elwell, Gaella
Conway	Kearshay, Leslie S.
Conway	Rosnick, Peter
Conway	Schroder, Susan
Conway	Sobek, Sandra M.
Cummington	Dondego, Margaret
Cummington	Reiken, Frederick
Cummington	Steenburgh, Michael A.
Cummington	Thomson, Ed
Dalton	Ailliten, Kathleen
Dalton	Balarchin, James S.
Dalton	Balardini, Esther
Dalton	Bellinger, Bernice J.
Dalton	Bichler, Joyce
Dalton	Bosworth, Timothy
Dalton	Boyle, Shane
Dalton	Bradley, Bob
Dalton	Brennan, J. J.
Dalton	Brennan, LesLee
Dalton	Buckley, Marilyn
Dalton	Cady, Karen K.
Dalton	Campbell, Susan M.
Dalton	Capozzi, Deryle A.
Dalton	Carty, Janet
Dalton	Churel, Kathleen M.
Dalton	Clark, Bonnie J.
Dalton	Cole-Duffy, Debra
Dalton	Colson, Mark
Dalton	Coughlin, Marianne
Dalton	Croughwell, Sharon
Dalton	Cyr, Kathy
Dalton	Damrell, Thomas
Dalton	Devereaux, Barbara

Dalton	DiMassimo, Joseph
Dalton	Donovan, Agnes
Dalton	Duncan, Kevin T.
Dalton	Eichorn, Irene
Dalton	Farien, Jacquelyn
Dalton	Farrell, Debra Ann
Dalton	Fasell, Josie
Dalton	Franklin, Jacob
Dalton	Furlano, Dan
Dalton	Furley, Brian R.
Dalton	Gallien, Jen
Dalton	Gelinas, Amy R.
Dalton	Goddard, Lynn
Dalton	Goerlach, Sara H.
Dalton	Goodrich, Marion
Dalton	Gopez, E.
Dalton	Hamel, David
Dalton	Herrick, Robert R.
Dalton	Higgins, Wendy
Dalton	Holsbor, Barlow D.
Dalton	Howard, Lynne
Dalton	Hume, Marcia E.
Dalton	Hume, Olive
Dalton	Hurley, Edna
Dalton	Imler, Barbara
Dalton	Jameson, M. A.
Dalton	Johnson, Terrence
Dalton	Kerr, Mary Jane
Dalton	King, Lawrence P.
Dalton	King, Joan B.
Dalton	Kirchner, Donna
Dalton	Koma, Rosemary
Dalton	Krasin, Bruce
Dalton	Krol, F. C.
Dalton	LaGrasse, Phil
Dalton	Lambodi, Richard A.
Dalton	Lewis, Margaret
Dalton	Lewis, Wendy B.
Dalton	Major, Eileen
Dalton	Manzella, Donna
Dalton	McCarthy, Dennis
Dalton	McCarthy, Pamela
Dalton	McCloskey, T. C.
Dalton	Melchner, Carol
Dalton	Messana, Charles C.
Dalton	Meyel, Frank
Dalton	Morris, John
Dalton	Morse, Floyd
Dalton	Murray, James
Dalton	Nary, Rose
Dalton	Parkington, Deborah
Dalton	Pease, Ron
Dalton	Pelh, Edward
Dalton	Pelh, Kathy
Dalton	Pero, Wallace J.
Dalton	Pierce, Laverne
Dalton	Pierce, Suzanne
Dalton	Poplash, Wade
Dalton	Reed, Mary E.
Dalton	Rumery, Andrea
Dalton	Sheehan, Bob
Dalton	Smart, Dave
Dalton	Stone, Deborah
Dalton	Taylor, Catherine C.
Dalton	Tillotson, Gary L.
Dalton	Underhill, Vivian C.
Dalton	Van Valkenburg, Edna
Dalton	Wallace, Judy
Dalton	Wells, Stanley H.
Dalton	West, Barbara
Dalton	Whitmore, Kathryn D.
Dalton	Willsped, Marion
Dalton	Winslow, Dick & Mary
Dalton	Winters, Rose Ann
Dalton	Wright, Dannie
Dalton	Wright, Lisa A.
Dalton	Wufand, D.
Deerfield	Boosahda, Laurie
Deerfield	Elliott, Mark
Deerfield	Elliott, Martha
Deerfield	Watt, Edward B.
Deerfield	Zindner, Karen
Dracut	Casper, Walter J.
E. Longmeadow	Alexander, Evelyn
E. Longmeadow	Ballan, Darlene
E. Longmeadow	Beaumer, Richard
E. Longmeadow	Betran, Steve
E. Longmeadow	Boggis, Laurie
E. Longmeadow	Borchino, Linda
E. Longmeadow	Borgath, Tony
E. Longmeadow	Borowiec, Raymond
E. Longmeadow	Bottomley, D.
E. Longmeadow	Boucher, Michael R.
E. Longmeadow	Brittain, Rachelle
E. Longmeadow	Calrey, Catherine
E. Longmeadow	Carpleck, Susan
E. Longmeadow	Case, Sarah
E. Longmeadow	Celetto, Pauline
E. Longmeadow	Champagne, Lisa
E. Longmeadow	Conway, Mary F.
E. Longmeadow	Day, Steven
E. Longmeadow	DeSousa, Mary Ann
E. Longmeadow	Demeo, Priscilla
E. Longmeadow	Desdiler, Cleo S.
E. Longmeadow	Dixson, Carryl
E. Longmeadow	Feathler, Donna
E. Longmeadow	Fredette, Dianne E.
E. Longmeadow	Glover, Kelly
E. Longmeadow	Hackett, Anna
E. Longmeadow	Hamilton, Bernie
E. Longmeadow	Harrigan, J.
E. Longmeadow	Harris, Todd
E. Longmeadow	Jackson, Lyn
E. Longmeadow	Jangrow, Betty
E. Longmeadow	Kibbe, Gail
E. Longmeadow	Kieliszer, Judy
E. Longmeadow	King, Robert
E. Longmeadow	Knight, Janet O.
E. Longmeadow	Kyte, Katherine
E. Longmeadow	Lacey, Frank K.
E. Longmeadow	Lord, James A.
E. Longmeadow	Maloni, Wendy
E. Longmeadow	Mannheim, Charles J.
E. Longmeadow	Markham, Clinton
E. Longmeadow	Martin, Diane
E. Longmeadow	Martin, Michelle
E. Longmeadow	Matheson, Carlene
E. Longmeadow	McAugh, Brian
E. Longmeadow	McCarthy, Kevin
E. Longmeadow	McKnight, Gordon
E. Longmeadow	Nelson, Carolyn K.
E. Longmeadow	Parker, Keaton
E. Longmeadow	Parzwand, Harriet
E. Longmeadow	Plass, Tracy
E. Longmeadow	Plourde, Joyce T.
E. Longmeadow	Popovich, Gregory

E. Longmeadow	Procopzo, Donna M.
E. Longmeadow	Ramirez, Joe
E. Longmeadow	Reardon, Emmett W.
E. Longmeadow	Salin, Dianne
E. Longmeadow	Satterfield, Kathy
E. Longmeadow	Schmidt, D.
E. Longmeadow	Scholtz, Pam
E. Longmeadow	Serafin, Charles
E. Longmeadow	Shannon, Ana
E. Longmeadow	Smith, Michael
E. Longmeadow	St. Claire, A.
E. Longmeadow	Stevens, A.
E. Longmeadow	Taylor, Chuck
E. Longmeadow	Tousignant, Lorraine
E. Longmeadow	Underhill, Gary R.
E. Longmeadow	Underhill, Flo
E. Longmeadow	Urban, Sara K.
E. Longmeadow	Vill, Thomas J.
E. Templeton	Avoli, Joseph
Easthampton	Latimer, Lynn
Easthampton	Parent, David D.
Fitchburg	Byron, Robert
Florence	Dewitz, Frederike
Florence	Diemand, Lisa
Florence	Kasper, Toby
Florence	Loomis, David S.
Florence	Morgan, Emma
Florence	Papillon, Dennis
Florence	Vincent, Noble E.
Gheny, NY	Mali, Adam K.
Gheny, NY	Mali, Ellen
Goshen	Blasenak, Nicole
Gr. Barrington	Clark, Larm S.
Grafton	Bemell, Eilene A.
Grafton	Bincardi, Beth
Grafton	Chen, Alice
Grafton	Cleanute, Gary
Grafton	Cohen, Jay
Grafton	Dewey, Susan B.
Grafton	Diy, Temail
Grafton	Dutoi, Dennis
Grafton	Fleming, Walter
Grafton	Goodford, Ronald
Grafton	Hobey, Deborah
Grafton	Jacobs, Marty
Grafton	Jeffrey, Sonya
Grafton	Kaelin, A. J.
Grafton	Lehman, Lea
Grafton	Nicholson, S.
Grafton	Nicholson, David
Grafton	Phames, Peter M.
Grafton	Phames, Mary L.
Grafton	Principe, Kathleen
Grafton	Schofield, Margaret
Grafton	Search, Richard
Grafton	Simard, Laurie
Grafton	Stein, James G.
Grafton	Synoka, Suzanne
Grafton	Webster, Kim
Grafton	Weston, William D.
Greenfield	Candelarn, Eric
Greenfield	Conant, Melanie
Greenfield	Frenholm, Richard
Greenfield	Hubert, Melissa
Greenfield	MCLeester, Dick
Greenfield	McAulay, Dan
Greenfield	McMahon, Mary J.
Greenfield	Rice-Holden, Margaret K.
Greenfield	Watroba, Zonia
Hadley	Carlisle, Fred
Hadley	Dempster, Meegan
Hadley	Frankewicz, Nellie
Hadley	Hope, Tryna
Hadley	Pratt, Jennine
Hadley	Steinbech, Eleanor J.
Hadley	Steinbeck, Frederick W.
Hadley	Warner, Lee Ann
Hancock	Prentiss, Barbara
Hardwick	Remington, Kerry
Haydenville	Allen, Barbara
Haydenville	Altwood, Deborah
Haydenville	Arel, Mary
Haydenville	Baker, Rick
Haydenville	Bart, Mary
Haydenville	Beaudoin, Brenda
Haydenville	Benoit, Richard
Haydenville	Benoit, Diane J.
Haydenville	Berkenwold, Allen
Haydenville	Billias, Nancy
Haydenville	Boas, Walter Kim
Haydenville	Breeze, Pamela
Haydenville	Briggs, Sue
Haydenville	Brown, Donald J.
Haydenville	Bussler, Anne
Haydenville	Childs, Richard
Haydenville	Childs, Bonnie
Haydenville	Clark, S. J.
Haydenville	Cone, Jr. , A. G.
Haydenville	Connell, Vickie
Haydenville	Cutler, William
Haydenville	Davis, Carol
Haydenville	Demeski, Carol
Haydenville	Driscoll, Roz
Haydenville	Dudley-Adams, Nina
Haydenville	Dunphy, Paul
Haydenville	Emerson, Walter R.
Haydenville	Gabranski, Carol F.
Haydenville	Gorman, C. Jemont
Haydenville	Graves, Christine
Haydenville	Gray, Diane
Haydenville	Guertz, Christine
Haydenville	Hall, Delmar H.
Haydenville	Hayler, Judi
Haydenville	Hodgkinson, Nancy
Haydenville	Hoffman, Marilyn
Haydenville	Jacob, Edward C.
Haydenville	Jawes, Robin
Haydenville	Jawes, Dave
Haydenville	Johnson, Suzanne
Haydenville	Kaplan, Ann
Haydenville	Killory, Mary J.
Haydenville	Kochin, Kurt
Haydenville	Lavalley, Doris A.
Haydenville	Linsoff, Corinne
Haydenville	Loomis, Cecil
Haydenville	Luce, Kathleen
Haydenville	Lyman, Sharon
Haydenville	Main, Joseph J.
Haydenville	Majesko, Karen
Haydenville	Marinaro, Jennifer
Haydenville	McElliott, Patricia
Haydenville	McQuesten, Maryellen
Haydenville	Morrey, Ann M.
Haydenville	Nurczyk, Janet
Haydenville	O'Brien, Erin
Haydenville	Page, Robert E.

Haydenville	Patterson, Sara
Haydenville	Pavelsyk, Paula
Haydenville	Pelkey, Rachel
Haydenville	Penn, Joel
Haydenville	Peter, Karen
Haydenville	Phinney, Marty
Haydenville	Pichotte, Lisa
Haydenville	Potter, Stacia
Haydenville	Roy, David B.
Haydenville	Schmith, Richard L.
Haydenville	Schmith, Beverly
Haydenville	Shepardson, Marian
Haydenville	Stumio, Richard J. C.
Haydenville	Symores, Eleanor
Haydenville	Thomas, Kathleen
Haydenville	Urekew, C.
Haydenville	Viennes, Susan
Haydenville	Webster-Brady, Diane
Haydenville	Wilson, James G.
Haydenville	Woofenden, Denise
Haydenville	Worsley, Robert
Holden	Daley, Christine
Holden	Gillespie, Anne R.
Holden	Gury, Lori
Holden	Halllarainen, Lynne
Holden	Kauppik, Janice
Holden	Mansfield, Valerie
Holden	Rosenstock, Catherine
Holden	Sokolovsky, Alexander
Holden	Stowe, Gail
Holden	Woodward, Beth
Holland	Dumont, Paul E.
Holland	Fila, Martha
Holland	Gaudette, Timothy
Holyoke	Heisler, Barbara
Huntington	Boutelle, Laura
Lanesboro	Pollock, Anna
Lee	Peiffer, Leah
Leeds	Augspurger, Mike
Leeds	Augspurger, Mary Jean
Leeds	Fried, Leni
Lenox	Alemany, Jason
Lenox	Alemany, Rachel
Lenox	Babbitt, Gene F.
Lenox	Bannish, Kristen
Lenox	Borden, Ross
Lenox	Boynton, Roberto
Lenox	Breglia, Luke
Lenox	Breslin, Andrew
Lenox	Breyin, Linda
Lenox	Burnhart, Amelia
Lenox	Burton, Kim L.
Lenox	Cabiles, Claire
Lenox	Capello, Jean
Lenox	Charlton, Kevin
Lenox	Cira, E. M.
Lenox	Combs, Michelle
Lenox	Considine, Shawn Leary
Lenox	Crossen, Peter
Lenox	Crossen, Jen
Lenox	Crossen, Jill
Lenox	Dewey, Philip M.
Lenox	Fisher, Paula J.
Lenox	Foley, Elizabeth
Lenox	French, Barbara M.
Lenox	Garrett, Alyssa
Lenox	Gordon, Andy
Lenox	Grogan, John
Lenox	Grogan, Margaret
Lenox	Hansen, Ralph
Lenox	Herliczek, Sandra
Lenox	Horgan, Joyce
Lenox	Hoyt, Derrick
Lenox	Jones, Karen
Lenox	Keyes, William
Lenox	Keyes, Elaine
Lenox	Klaisinger, Dave
Lenox	Lemanski, Colette
Lenox	Lymon, Juan E.
Lenox	Marasco, Art
Lenox	Morley, Francis
Lenox	Morse, L. D.
Lenox	Panitch, Karyn
Lenox	Patnode, Sarah
Lenox	Phinney, Elizabeth
Lenox	Pisida, Elisabeth
Lenox	Romeo, Victor
Lenox	Romeo, Linda M.
Lenox	Samale, Michael
Lenox	Schecter, Peba
Lenox	Seth, Anne
Lenox	Stack, Miriam
Lenox	Stevens, Elizabeth
Lenox	Sullivan, Jeaninne
Lenox	Sullivan, Kelly
Lenox	Thornton, P. L.
Lenox	Trancynge, Chris
Lenox	Trancynge, Claudia
Lenox	Vaughan, Frances
Lenox	Vicente, Reginald P.
Lenox	Vreeland, Sandra
Lenox	Wessel, Runhill
Lenox	Witker, Christine
Lenox	Wolfe, Stanley
Lenox	de Lucas, Mike
Leverett	Abdow, Lusley
Leverett	Allen, Rebecca L.
Leverett	Allen, Sharon
Leverett	Aprilstein, J.
Leverett	Arnold, Bonnie
Leverett	Bannister, Roberta
Leverett	Black, Barry
Leverett	Boone-Sexton, Heidi
Leverett	Boucher, Paul W.
Leverett	Boucher, Cheryl
Leverett	Brown, Jannell
Leverett	Chapin, Jenny
Leverett	Chapin, Karen
Leverett	Corcoran, Sondra
Leverett	Crafts, Calla
Leverett	Daniell, Peter
Leverett	Davis, Hope
Leverett	DeSanti, Raymond
Leverett	Donnell, Michael
Leverett	Eisenberg, Freda
Leverett	Fryer, Judith
Leverett	Godsey, Richard
Leverett	Goldstein, Barbara
Leverett	Gulect, Heidi
Leverett	Hall, Dana
Leverett	Harris, Lisa
Leverett	Henion, David W.
Leverett	Henley, Tamara
Leverett	Howard, Greg
Leverett	Jacques, Kimberley
Leverett	Juels, Rhoda

Leverett	Kachavos, E.
Leverett	LaClaire, Beverly
Leverett	Lafferty, K.
Leverett	Lambert, Ellis
Leverett	Lamothe, Alison
Leverett	Lanneh, Marian Annie
Leverett	McNeal, Martha
Leverett	Morin, Mary
Leverett	Nelson, Suzanne
Leverett	Neville-Anderson, Pat
Leverett	Nopper, Shirley
Leverett	Owens, Timothy M.
Leverett	Parslon, Pam
Leverett	Philla, Arlene
Leverett	Pinkett, Richard
Leverett	Rago, Caroline N.
Leverett	Rashentz, Elaine
Leverett	Rogers, Susan
Leverett	Savolaiman, Jenny
Leverett	Schenley, Elizabeth
Leverett	Schmidt, Stephen
Leverett	Shamey, James N.
Leverett	Sharpe, Cheryl
Leverett	Stafford, Grace M.
Leverett	Stevens, Kathryn
Leverett	Taylor, Brian
Leverett	Taylor, Bruce
Lexington	Coverdale, Shane
Leyden	Oates, Cheryl
Leyden	Woods, Kristy
Lincoln	Horwitz, Wendy
Lincoln	Waulkmer, Robert
Longmeadow	Aminla, David
Longmeadow	Fine, Russell M.
Longmeadow	Gold, Myra
Longmeadow	Joy, Yasha
Longmeadow	Rosen, Evelyn S.
Longmeadow	Yashgur, Greg
Ludlow	Atwell, Brenda
Ludlow	Cislak, Matilda
Ludlow	Peter, Michelle A.
Ludlow	Polak, Paul
Millers Falls	X, Barry
Monson	Barr, David
Monson	Barr, Leverett
Monson	Barr, Joan-Carol
Monson	Delskey, Eleanor M.
Monson	Fenton, Toby
Monson	Gendron, Ronald
Monson	Gendron, Kathleen
Monson	Hajouk, Rose
Monson	Halpern, Leslie
Monson	Holden, Alice
Monson	Horton, Frances M.
Monson	Markham, Simone
Monson	McDonald, Pamela
Monson	Meshlovitz, Jill
Monson	Milne, Theresa
Monson	Monte, Laura
Monson	Puliafico, Judith
Monson	Smith, James
Monson	Soltys, Bertha
Monson	Van Houten, J.
Monson	Vester, Theresa
Monson	Williams, Reggie
Monson	Williams, Donna
Montague	Combs, George
Montague	Dragon, Roland
Montague	Fetler, Jonathan
Montague	Hides, James M.
Montague	Holmes, David
Montague	Schaler, Leslie
Montague	Shelton, Dale E.
Montague	Spartichino, David
Montague	Ward, John
Montague	Watroba, Todd
Monterey	Basis, Howard
Monterey	Basis, Joan
Monterey	Basis, Thea
Monterey	van de Werf, Frans
N. Grafton	Bojarski, C.
N. Grafton	Doyle, Cathy
N. Grafton	Jacob, Michelle
N. Grafton	Jones, J.
N. Grafton	McGahey, Victoria
N. Grafton	Munson, J.
N. Grafton	Smith, Nanette
N. Grafton	Whittemore, L.
N. Hayfield	Linscott, Gary R.
N. Brookfield	Dougan, Lee K.
N. Brookfield	Mucha, Carolyn
N. Brookfield	Mucha, Marna L.
New York, NY	Bridges, Stephen
Newton	Albeck, Simone
North Adams	Rose, Susan
Northampton	Abdul-Rasool, Hala
Northampton	Almeder, Melanie
Northampton	Balestri, Camille
Northampton	Bell, Angie
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Northampton	Carter, Perry
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Northampton	Lavelle, Jane
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Northampton	Orzel, Shannon
Northampton	Palecki, John
Northampton	Richardson, William E.
Northampton	Slowe, Diane
Northampton	Turcotte, Theresa
Northampton	Weihrauch, Doug
Northampton	Wielgel, Anita
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Northfield	Calabria, Philip
Northfield	Calabria, Susan
Northfield	Cevasco, John R.
Northfield	Doty, Debra L.
Northfield	Farmer, T. S.
Northfield	Fitzgerald, Allen
Northfield	Jessin, Gerald D.
Northfield	Koznia, Michele
Northfield	Lanphado, Mary
Northfield	Mathews, Richard J.
Northfield	McComas, Judy A.
Northfield	Ross, Robert J.
Northfield	Ross, Susan P.
Oakdale	Ahlquist, John S.
Oakdale	Cox-Pratillo, Janice
Oakdale	Douataz, William
Oakdale	Downs, Alden

Oakdale	Thega, Harry
Oakham	Barringer, John
Oakham	Besse, Sue
Oakham	Claytron, Jesse
Oakham	Dgerick, Edward
Oakham	Dignan, Nancy
Oakham	Garvin, Elizabeth
Oakham	Gilrein, Jennifer
Oakham	Gray, Arthur R.
Oakham	Griffith, James
Oakham	Hardiman, Ann
Oakham	Neefon, Elizabeth
Oakham	Oryci, Alecksandre
Oakham	Paradis, J.
Oakham	Reynolds, Thomas
Oakham	Rodriquez, Sashu
Oakham	Sandman, Sandi
Oakham	Wilson, Craig
Palmer	Askin, Risa
Palmer	Barnes, Joyce
Palmer	Bleau, Myrna
Palmer	Brozek, Betty
Palmer	Carr, Karen
Palmer	Chmura, Josephine
Palmer	Cole, Alan
Palmer	Corbin, Mary C.
Palmer	Crowther, Gilbert A.
Palmer	Dembkowsky, Ruth
Palmer	Drake, Elizabeth
Palmer	Flaszyaoski, Donna Lee
Palmer	Goldin, Carol
Palmer	Haley, Annette
Palmer	Hinshey, Joseph P.
Palmer	Hurley, Michael P.
Palmer	Jernosz, Mark
Palmer	Jernosz, Kathy
Palmer	Kennedy, Frances J.
Palmer	Mann, Glana
Palmer	McCord, Karen
Palmer	Milikowste-Silva, Krista
Palmer	Moore, Eastlyn
Palmer	Palmere, Paulette
Palmer	Pascale, Patricia
Palmer	Pierce, Cindy Lee
Palmer	Podykulos, Richard R.
Palmer	Pouliot, David G.
Palmer	Seguin, Arthur C.
Palmer	Smith, Raymond
Palmer	Smith, Ellen M.
Palmer	Smith, Kathy
Palmer	Soirette, Esther R.
Palmer	Tumer, Clara
Palmer	Welsh, Catherine L.
Palmer	Young, Eileen
Paxton	Arms, Jennifer
Pelham	Biamante, Gloria
Pelham	Burnett, Janet
Pelham	Lopes, Renee
Pelham	Shanor, Richard B.
Petersham	Baisley, David
Petersham	Berry, J. L.
Petersham	Chicoine, Mary
Petersham	Connors, Carolyn F.
Petersham	Cummings, Elizabeth W.
Petersham	Fitzgerald, Susan
Petersham	Kimball, Pamela
Petersham	LaPointe, John L.
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Petersham	Levine, Ken
Petersham	Levine, Molly
Petersham	Malozzi, R. J.
Petersham	Mandel, Eric
Petersham	Marsh, Elizabeth C.
Petersham	Riley, Susan
Petersham	Shaw, John
Petersham	Shaw, Gail
Petersham	Susen, Andrew P.
Petersham	Tate, Gordon
Petersham	Tate, Florence
Petesham	Palin, Janet
Philadelphia, PA	Goldstein, Glenn
Phillipston	Whiting, Craig
Pittsfield	Adamo, Phil
Pittsfield	Adamo, Karen
Pittsfield	Ahern, Dave
Pittsfield	Alene, Suzanne
Pittsfield	Allshouse, Craig
Pittsfield	Arseneau, Christine
Pittsfield	Aulisia, John
Pittsfield	Barry, Alice Ann
Pittsfield	Bennett, Tara A.
Pittsfield	Boetti, June
Pittsfield	Bonnell, Joseph
Pittsfield	Burrow, Liesel
Pittsfield	Byrd, David C.
Pittsfield	Carlo, Liz
Pittsfield	Casella, Daniel
Pittsfield	Casella, Linda
Pittsfield	Cianfarini, Barbara E.
Pittsfield	Clark, Kevin
Pittsfield	Coty, Hazel
Pittsfield	Danielson, Nancy
Pittsfield	Dobson, Mary
Pittsfield	Dolbeare, Nancy N.
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Pittsfield	Dowling, Beth
Pittsfield	Durso, Alfred
Pittsfield	Everett, Apendi
Pittsfield	Forrest, Ed
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Pittsfield	Guilds, Robert R.
Pittsfield	Harford, Kristie
Pittsfield	Hatch, Earl
Pittsfield	Hebler, Toby L.
Pittsfield	Herbell, Mary Anne
Pittsfield	Hoose, Delbert
Pittsfield	Houle, Anita
Pittsfield	Howard, Joan
Pittsfield	Howe, Randall H.
Pittsfield	Hutchinson, Florence
Pittsfield	Johnson, David
Pittsfield	Johnson, Joyce
Pittsfield	Kasura, Mark
Pittsfield	Keith, Lawrence P.
Pittsfield	Kelmorsky, Donna
Pittsfield	Kerr, Kevin J.
Pittsfield	Kriedman, Sardi
Pittsfield	Kutik, Allen
Pittsfield	Kutik, Alexander
Pittsfield	Laraway, Gwendolyn
Pittsfield	Larkin, R.
Pittsfield	Lucaroni, Angela
Pittsfield	Lussier, Chris
Pittsfield	Lussier, Wilfred L.
Pittsfield	Lynch, Steve
Pittsfield	Lyon, Wesley

Pittsfield	McCluskey, Lisa
Pittsfield	Mebe, Nicholas J.
Pittsfield	Michalski, Holly
Pittsfield	Mintz, Daniel
Pittsfield	Munger, Ralph W.
Pittsfield	Nixon, J.
Pittsfield	O'Toole, Edward
Pittsfield	O'Toole, Kelly
Pittsfield	Phillips, Jody L.
Pittsfield	Preisser, Tracy
Pittsfield	Quail, Lisa
Pittsfield	Raftery, Patrick M.
Pittsfield	Reed, Kristine
Pittsfield	Reed, Jr. , Lewis K.
Pittsfield	Reynolds, Karen
Pittsfield	Roy, Rain
Pittsfield	Ruto, Karen M.
Pittsfield	Scaborough, Laura
Pittsfield	Schneide, Karen
Pittsfield	Silveira, Edward D.
Pittsfield	Smith, Kimberley L.
Pittsfield	Stevens, Richard
Pittsfield	Syken, Lillian H.
Pittsfield	Taylor, Cynthia
Pittsfield	Tinger, John
Pittsfield	Wallerd, Jean
Pittsfield	Wannamaker, Jessyca
Pittsfield	Wehy, Andre J.
Pittsfield	Williamson, Joan
Pittsfield	Wilson, Elise
Putney, VT	Bekoff, Jon
Richmond	Robbins, R. L.
Rochdale	Faron, Martha E.
Rowe	Wilson, Doug
S. Deerfield	Bartos, Edith
S. Deerfield	Byarro, Ann
S. Deerfield	Byarro, Betsy
S. Deerfield	Cacace, Donna
S. Deerfield	Chmura, Zephyr
S. Deerfield	Corcoran, James P.
S. Deerfield	Corcoran, Laura
S. Deerfield	Dagnosa, Jared
S. Deerfield	Daughton, Tom
S. Deerfield	Decker, Jennifer
S. Deerfield	Fortin, Glenn
S. Deerfield	Gass, Laurietta
S. Deerfield	Goodpastor, Nancy
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S. Deerfield	Kostecki, Philip
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S. Deerfield	LaCascia, Matt
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S. Deerfield	Terreden, Robert
S. Deerfield	Watroba, Chris
S. Deerfield	Watroba, Peter
S. Deerfield	Watroba, Kathleen
S. Deerfield	Wattles, Pamela
S. Deerfield	Yazstremski, Carl
S. Hadley	Babson, James A.
Shelburne Falls	Downs, James
Shelburne Falls	Downs, Susan
Shelburne Falls	Ford, Anitra
Shelburne Falls	Lewis, Susan R.
Shelburne Falls	Robbins, Susan
Shelburne Falls	Seery, John
Shelburne Falls	Sieser, Mitch
Shelburne Falls	Stockey, Donna
Shelburne Falls	Sulandt, Elizabeth
Shelburne Falls	Taylor, Doug
Shelburne Falls	Ulrich, Gail
Shelburne Falls	Voutibs, Suzi
Shutesbury	Arvanitis, Marty
Shutesbury	Baglow, Betsy
Shutesbury	Baines, Michael
Shutesbury	Baronas, Henry
Shutesbury	Batty, Paul
Shutesbury	Batty, Judith S.
Shutesbury	Berger, Larry
Shutesbury	Berlin, Daniel
Shutesbury	Bloomfield, Kathleen
Shutesbury	Bodendorf, Jan
Shutesbury	Brief, Monique
Shutesbury	Broucek, John
Shutesbury	Bryant, John
Shutesbury	Cinner, Dee
Shutesbury	Clark, Ann
Shutesbury	Costello, Paul
Shutesbury	Dufresne, Michele
Shutesbury	Ellis, Glenn
Shutesbury	Griffin, Carol
Shutesbury	Hemingway, Jamar
Shutesbury	Hill, Robin
Shutesbury	Hoffman, James T.
Shutesbury	Jacoby, Diane
Shutesbury	Karen, Scott
Shutesbury	Kerwin, Robert
Shutesbury	Leighton, Ken
Shutesbury	Lussier, John
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Shutesbury	Ramey, Richard
Shutesbury	Risech, Flavin
Shutesbury	Robinson, Victor
Shutesbury	Ross, Michael
Shutesbury	Scott-Baines, Linda
Shutesbury	Sephton, Grace
Shutesbury	Shulman, Amy
Shutesbury	Sicigarro, Laura
Shutesbury	Steenstrup, Susan J.
Shutesbury	Young, Suzanne
Southampton	Barro, Maurice
Southampton	Bean, Robert
Southampton	Duncan, Elylna
Southampton	Emerson, Mabel
Southampton	Gagliano, Carl
Southampton	Gauvin, Mark
Southampton	Gero, Carolyn
Southampton	Hallett, James
Southampton	Hartmann, Barbara
Southampton	Hirsch, Susan
Southampton	Howlett, Frances
Southampton	Jones, Kenneth
Southampton	Kelly, James
Southampton	Lacy, Catherine
Southampton	Laprade, Dan
Southampton	Levinson, Andrea
Southampton	Lewis, Briana
Southampton	Mark, Kristen
Southampton	Marren, Rosemary
Southampton	Martin, Art
Southampton	Martin, Theresa

Southampton	McQuillan, Dawn
Southampton	Miele, Barbara
Southampton	Nulph, Laurir
Southampton	Nulph, Patrick
Southampton	Parker, Jonathan
Southampton	Picard, Thomas E.
Southampton	Pollender, Jason
Southampton	Pollender, Jeremy
Southampton	Russell, Beth D.
Southampton	Sullivan, Brian
Southampton	Tuleja, Frances
Southampton	Valego, Jan
Southampton	Waxler, Stanley
Southfield	Jacobsen, Patricia
Southwick	Degan, Jan
Southwick	Matthews, Robert
Southwick	Stewart, Russ
Southwick	Suborski, Cheryl
Springfield	Bellon, Diane
Springfield	Coplin-Newbury, Marilyn
Springfield	Ford, Glenus C.
Springfield	Fratini, Stephen
Springfield	Goldberg, Lynn S.
Springfield	Kahn, Herbert
Springfield	McCullough, Bernice
Springfield	McCullough, Dolores
Springfield	McHugh, Maureen
Springfield	Phillips, Mark
Springfield	Smith, Jeremy J.
Stockbridge	Black, Maria
Stockbridge	Clark, Nancy
Stockbridge	Eisenberg, Phoebe
Suffield, CT	Dorman, T.
Suffield, CT	Fish, Paula
Sunderland	Chamberlin, Shannon
Sunderland	McLary, S. Christine
Sunderland	Peltz, Doria
Sunderland	Sheridan, Laura
Tariffville, CT	Morey, Craig
Thomdike	Cadieux, Susan
Thorndike	Ellithorpe, Madlyn
Thomdike	Grabowski, Julia
Thomdike	Johnson, Renee J.
Thomdike	Parent, Candice K.
Three Rivers	Aniskiewicz, Ann
Three Rivers	Asplund, Nancy E.
Three Rivers	Bisnette, Audrey E.
Three Rivers	Charwick, Mary
Three Rivers	Coderre, Alma
Three Rivers	Coderre, Yvette
Three Rivers	Conant, Mary
Three Rivers	Greany, Joanne
Three Rivers	Kinney, Mary
Three Rivers	Koziol, Julia
Three Rivers	Kszepka, Thaddeus
Three Rivers	Luzi, Louis R.
Three Rivers	Marciniec, Marjorie
Three Rivers	McAdam, Margaret
Three Rivers	Olearczyk, Lillian
Three Rivers	Pisch, Alice
Three Rivers	Pobieglo, Richard M.
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Three Rivers	Pythka, Edna
Three Rivers	Renaud, Vera
Three Rivers	Roszko, Alphonse C.
Three Rivers	Roszko, Fredericka
Three Rivers	Sawicki, Stanley
Three Rivers	Sawicki, Valerie
Three Rivers	Topor, Anne
Townsend	Craig, Eric
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W. Boylston	Aharoman, Irma
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W. Boylston	Anderson, Evelyn E.
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W. Boylston	Bayliss, Suti
W. Boylston	Blaisdell, Marilyn
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W. Boylston	Bonneau, Deb
W. Boylston	Book, Janice F.
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W. Boylston	Buttrick, Mary Jean
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W. Boylston	Carlson, Clarice
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Ware	Hogan, Maura
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Warren	Cosby, Brenda J.
Warren	Goodreau, Donna
Warren	Sherman, Joan
Warren	Toutant, Gretchen
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Wendell	Sheola, Rosemary
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Westfield	Stroctzel, Deborah
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Westfield	Switzer, Ken
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Westfield	Watson, Bob
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Whately	Bardwell, Adelia A.
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Whately	Celatka, Debra
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Whately	Denehy, JoAnn
Whately	Giordan, Roberta
Whately	Godbout, Richard
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Whately	Kaiser, Ward
Whately	Kennedy, Joan
Whately	Koch, Robert G.
Whately	LaDouceur, John
Whately	Lava, Wallace H.
Whately	Lipton, Roger
Whately	Ludlam, Stuart D.
Whately	Masarjian, Jeff
Whately	Mason, Janice P.
Whately	Matuszell, Edward
Whately	McEnaney, Janet
Whately	Morton, Elinor P.
Whately	Parsons, Ruth E.
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Whately	Poore, Mary
Whately	Powers, Jason
Whately	Rawls, Ben
Whately	Rawls, Lawrence S.
Whately	Rawls, Barbara H.
Whately	Reyes, J. T.
Whately	Roder, James S.
Whately	Rodriques, Alan L.
Whately	Scheurer, Anne
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Whately	Sibley, Randy R.
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Wilbraham	Johnson, Bernard
Wilbraham	Wilcox, Tamara L.
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